

HP Professional

THE MAGAZINE FOR HEWLETT-PACKARD ENTERPRISE COMPUTING ▴ VOL. 6 NO. 12

DECEMBER 1992

NETWORK ADMINISTRATION

**Can HP OpenView
Manage Your
Multivendor LAN?**

SURVIVING THE TIMES
**X.25 Remains
A Viable Networking
Solution**

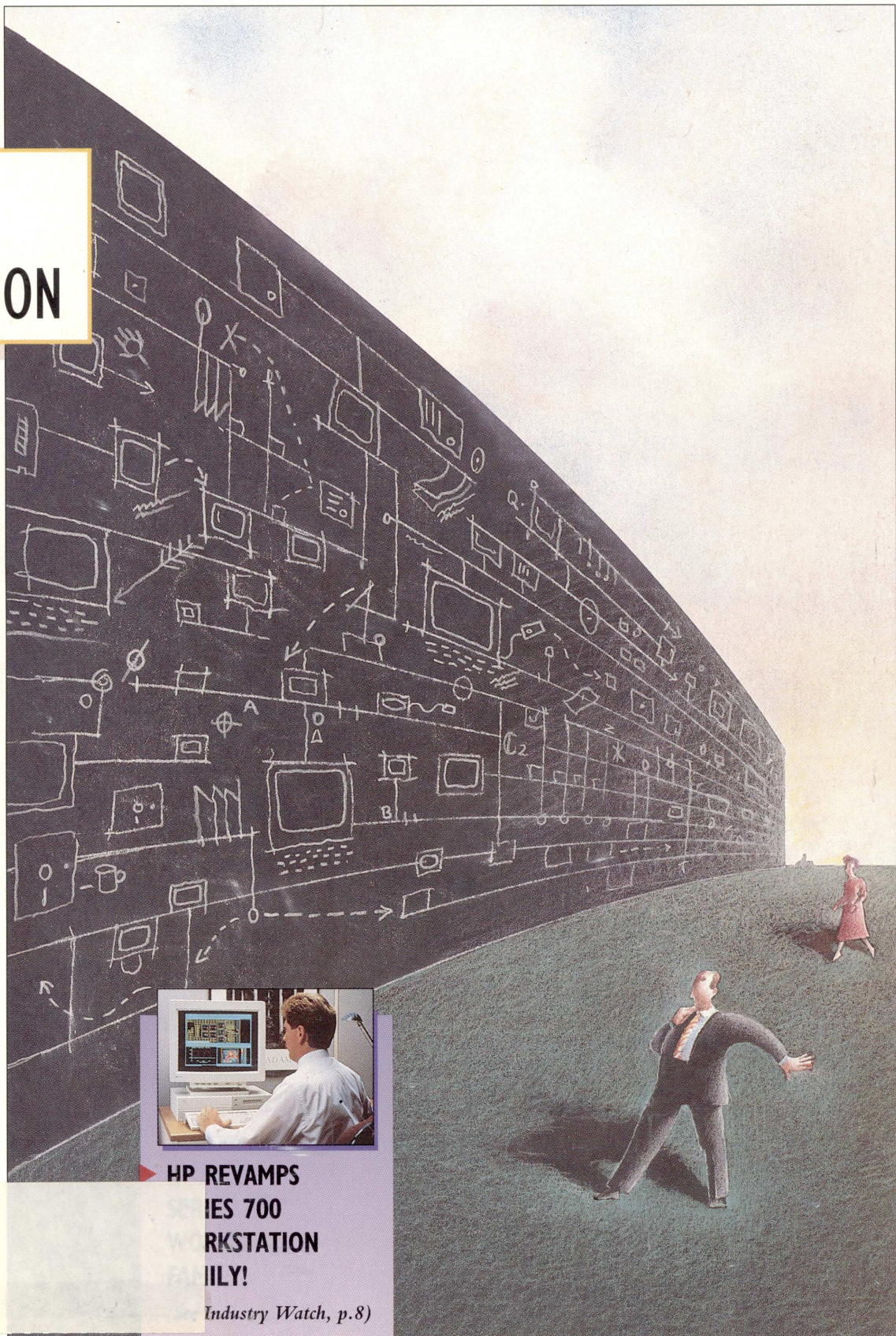
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(Industry Watch, p.8)



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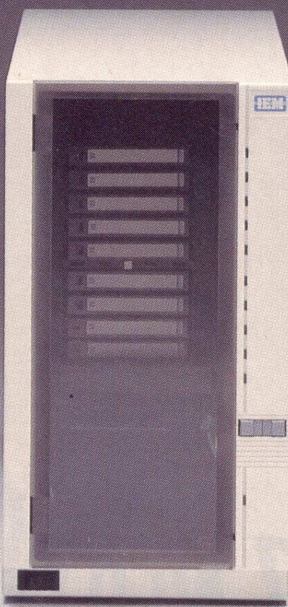
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By Eric Smalley

HP's OpenView network management system competes head-on with SunConnect's low-cost SunNet Manager — is there an obvious choice? OpenView offers a range of third-party, multiplatform management tools that most enterprise network managers can't resist. Still, price differences may cause some users to look at Sun.

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By Tim Cahoon

The X.25 wide area network interface standard survived the international datacom revolution of the '80s and could become a low-cost global workhorse for the '90s. It's cheap, and for much of the European Economic Community, it's the only game in town.

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By Bill Sharp

Whether you're implementing a client-server LAN or offloading a mainframe application, consultants and system integrators can help you out in the trenches. Their most crucial role is determining if what you want, is really what you need.

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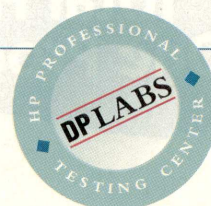
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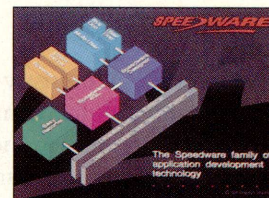
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HP PROFESSIONAL ISSN 0896-145X is published monthly by Cardinal Business Media Inc., 101 Witmer Rd., Horsham, PA 19044. Subscriptions are complimentary for qualified U.S. and Canadian sites. Single copy price, including postage \$4. One year subscription rate: \$30 U.S. and Canada; \$60 foreign. All orders must be prepaid. For reprints, contact Reprint Management Services, 505 E. Airport Rd., Lancaster, PA 17601; (717) 560-2001, Fax (717) 560-2023. Second Class postage paid at Horsham, PA 19044, and additional mailing offices. POSTMASTER: Send all correspondence and address changes to HP PROFESSIONAL, P.O. 616, 101 Witmer Rd., Horsham, PA 19044. COPYRIGHT © 1992 by Cardinal Business Media, Inc. All rights reserved. No part of this publication may be reproduced in any form without written permission from the publisher. All submitted manuscripts, photographs and/or artwork are sent to Cardinal Business Media, Inc. at the sole risk of the sender. Neither Cardinal Business Media, Inc. nor HP PROFESSIONAL magazine is responsible for any loss or damage. HP PROFESSIONAL is an independent journal not affiliated with Hewlett-Packard Company. HP and Hewlett-Packard are registered trademarks and HP PROFESSIONAL is a trademark of Hewlett-Packard Company.



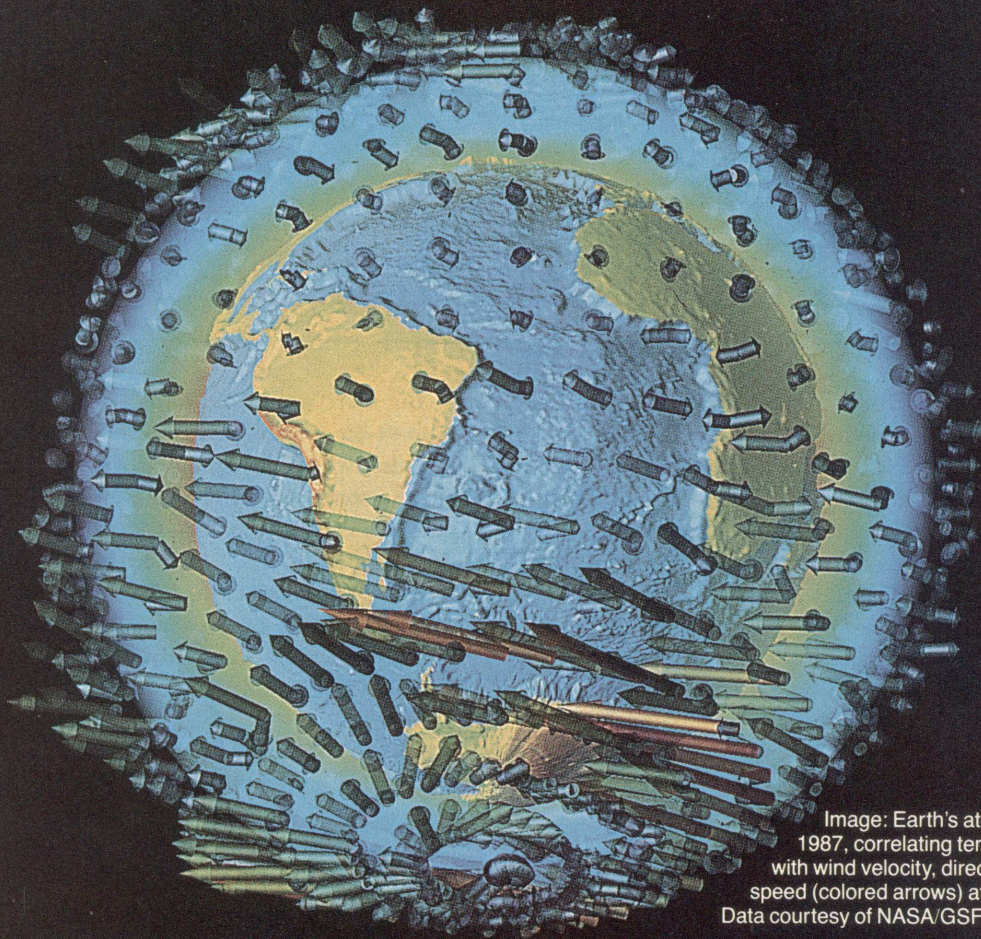


Image: Earth's atmosphere on Oct. 1, 1987, correlating temperature (bluish haze) with wind velocity, direction and horizontal speed (colored arrows) at 1000-100 mb. Data courtesy of NASA/GSFC-NSSDC.

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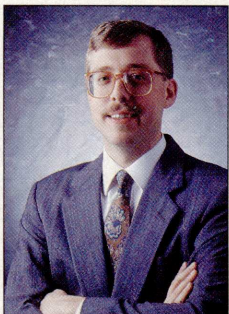
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Comes The Revolution ...



By Don Marks



Dubbed Super Tuesday by industry analysts, November 10, 1992 saw the introduction of the two most powerful families of desktop systems in computing history: Digital's first systems based on the Alpha AXP RISC architecture and a complete overhaul of HP's Series 700 line, now based entirely on the PA-RISC 7100 chip. It also marked the birth of a whole new era in information technology.

In an industry where eras last six to eight months, pronouncements like that tend to wash over people like so many pleasantries about the weather. Indeed, it's become as customary to preface product introductions with the promise of a "paradigm shift" as it is to open with a joke on the rubber-chicken circuit. Real change, however, is atmospheric and difficult to quantify — more likely to be felt than observed. The importance of last month's news from HP and Digital, for example, wasn't to be found in the products' impressive performance but rather in the way the introductions reflected larger, ongoing transformations in the industry.

But First, A Little Alpha-Seltzer

HP customers with significant investments in PA-RISC may have been surprised by Digital's beefy performance claims for Alpha — and by the rapidity with which RISC-technology enabled a company that was trailing miserably in most price/performance measures to challenge HP's industry-leading offerings. Truth be told, however, there were a few holes in Digital's dramatic story, and a preliminary reality check may be in order.

For example, Digital claimed to deliver the industry's "first true 64-bit architecture." This grandiose factoid garnered a disproportionate amount of media coverage on the day of the announcement. Seemingly awestruck, computer-illiterate anchormen around the country marveled at the ability of a tiny computer chip to address enough memory space to account for every word in a row of file cabinets that could encircle the globe 5,000 times. Don't ask me how DEC's PR guys concocted the analogy — I'm still straining to visualize that office equivalent of Saturn's rings.

"True," of course, is a relative term, and it's worth noting some relative inaccuracies in Digital's claim. Like Alpha, PA-RISC is internally a 64-bit architecture and can support full 64-bit memory addressing. Nevertheless, there was a kernel of truth in DEC's claim: Unlike Alpha, PA-RISC relies on a 32-bit bus.

But there was also a "kernel" of untruth. At present, there is no 64-bit operating system kernel in widespread use, and that includes two of the operating systems Digital plans to run on Alpha systems: VMS and Microsoft's Windows NT. Digital argues that OSF/1, for which it now offers a developer's kit, will be a fully 64-bit OS. This may be true, but it's doubtful that applications developed for OSF/1 in the near term will take advantage of its 64-bit capabilities. The need for a moonshot's worth of memory hasn't materialized just yet. By the time it does, HP will doubtless have it too.

Harmony Behind The Hype

Interneine industry conflict aside, there was one striking similarity between the Alpha and PA-RISC announcements. Given the sheer power of these systems (HP's industry-leading Model 735 now delivers 147 SPECmarks on the desktop), the companies were forced to devote considerable time and speculation to the ways in which all this newly-affordable, RISC-driven performance might conceivably be used.

According to Digital's PR crystal ball, Alpha's mega-mips make possible a new era of multimedia applications that encompasses "virtual reality, imaging ..., artificial intelligence, language translation, advanced simulation and voice recognition."

One step ahead in reality, though trailing markedly in hyperbole, HP, for its part, introduced support for CD-quality audio and real time video. It also debuted an integrated multimedia application called MPower, which could turn out to be the first salvo in an all-out war for the emerging multimedia market.

MPower allows users to access a variety of media formats, including voice, text, graphics, video and fax, and to integrate these media into E-mail messages and compound documents. Based on HP SharedX, which enables multiple users to simultaneously access the same X Window, MPower also permits users to jointly edit or annotate a document, graphic design or any other type of file via a facility known as Shared Whiteboard.

Combine the functionality of this collaborative workspace with a conference call and a global information network, and you've got an application that extends the boundaries of workgroup computing across continents and time zones. You've also discovered a real use for piles of SPECmark power and gazillions of file cabinets worth of memory.

You heard it here first: There's big changes ahead — really big. Really.

A handwritten signature in cursive script that reads "Don Marks".

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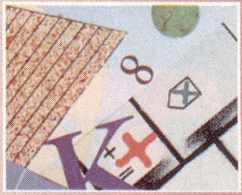
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INDUSTRY WATCH

Bill Sharp

process of putting Bill Clinton in the White House, when the international world faced the first traumatic test of its most powerful leader: Which new UNIX workstation will Mr. Bill endorse?

"President-elect Clinton, in the wake of new workstation introductions from IBM in September and DEC, Sun and HP just after election day, how will the White House determine the best systems to install in your basement situation room?"

Dogged by this persistent question at every turn, the president-to-be retreated to the Governor's mansion in Little Rock, polishing his inauguration address and leaving us without the definitive answer to the most pressing predicament of our time. There is little alternative but to make up our own minds.

HP's Transition Team

HP does its best to make the choice an easy one with its latest ticket of thoroughly electable workstations.

■ PA-RISC 7100 chips push up HP performance across the family with single-chip implementation, full binary compatibility with previous PA-RISC chips, 100-MHz speed, 2-way superscalar 0.8-micron CMOS implementation.

■ New high-end Model 735 and 755 systems offer performance of 147 SPECmark89 and 124 mips, with a new 20 MB/sec bandwidth fast and wide SCSI2 and tightly integrated FDDI for fiercely fast I/O.

■ New high-end HP CRX-48Z graphics provides 24-bit, 24/24 double buffering, 1.9 million 3-D vectors per second and 600,000 3-D triangles per second. Both 3-D graphics systems, CRX 24Z and CRX

No sooner did Americans complete the grueling process



HP energizes industry-leading Series 700 line with five new models based on PA-RISC 7100 chip.

48Z, are supported on low-end 715 and 725 models.

■ New Model 715 and 725 entry-level systems feature 33 MHz and 50 MHz 7100 chips, with more limited expansion to

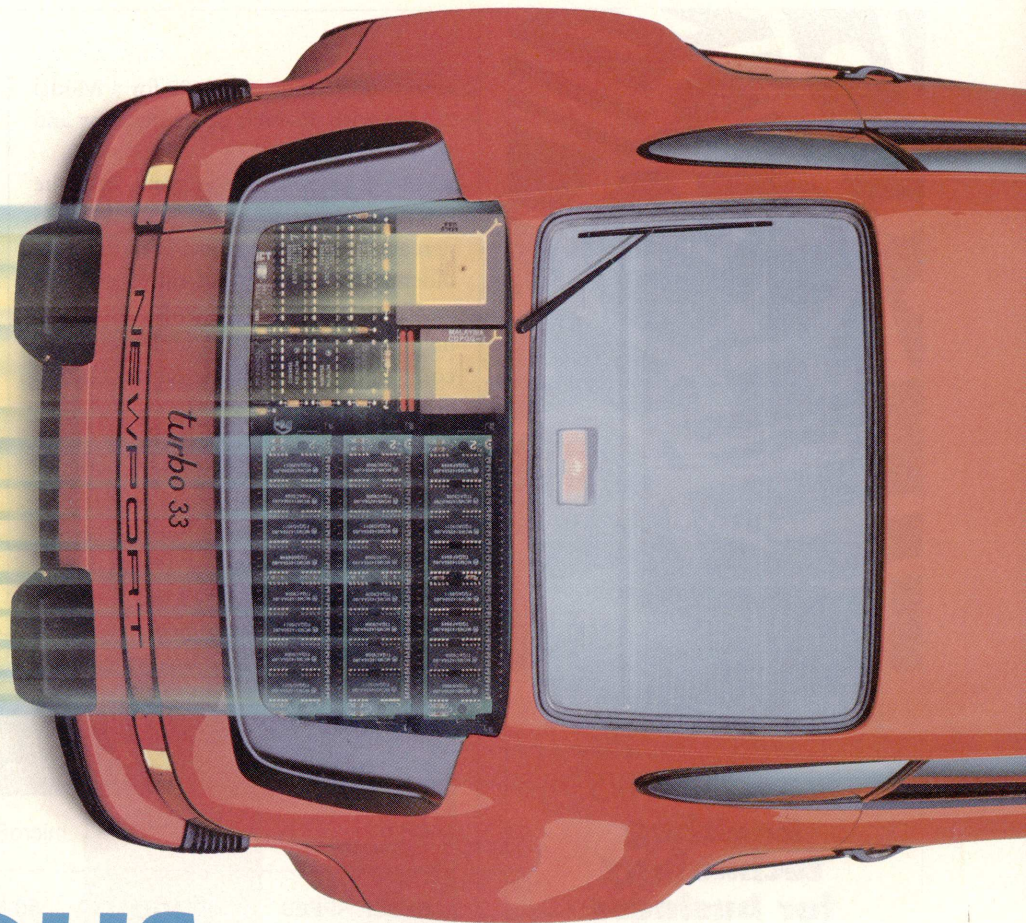
hold down costs. Model 715/33 provides 45.9 SPECmark89 and 41 mips, while 715/50 and 725/50 produce 69 SPECmark89 and 62 mips.

■ New diskless workstations for client-

MODEL	HP 715 /50	HP 725 /50	HP 735	HP 755	Sun SS10 52/54*	DEC 3000 400 AXP	DEC 3000 500 AXP	IBM 580
CHIP	PA-RISC 7100	PA-RISC 7100	PA-RISC 7100	PA-RISC 7100	SPARC	Alpha AXP	Alpha AXP	POWER RISC
CLOCK SPEED	50 MHz	50 MHz	99 MHz	99 MHz	45 MHz	133 MHz	150 MHz	63 MHz
SPECfp92	72	72	151	151	71	112	126	125
SPECint92	36	36	80	80	58	65	74	59
INT. MEMORY	8-192 MB	32-256 MB	64-400 MB	64-768 MB	64-512 MB	128-512 MB	256 MB to 1GB	64 MB to 1GB
STORAGE	2 - 69 GB	2-240 GB	520 MB to 125GB	2-297 GB	1-26 GB	2.1-9.5 GB	4.2-12 GB	133 GB max
BASE PRICE (greyscale)	\$12k	\$18k	\$34k	NA	\$40k	\$15k	NA	\$69k
BASE COLOR (with disk)	\$14k	\$20k	\$37k	\$59k	NA	NA	\$39k	NA
SPECfp92/\$1,000	6.0	4.0	3.7	2.3	1.8	7.4	3.2	0.8
SPECint92/\$1,000	3.0	2.0	2.0	1.2	1.5	4.3	1.9	1.7

*Per Processor

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server use starting at \$5,695 for a Model 715/33 with 15-inch color monitor and 16 MB of RAM.

■ HP-UX does a turn as well, with the unveiling of version 9.0, with 10 to 15 percent better OS performance even on older systems because of tuned compile and link; HP VUE 3.0 with hyper-text help and preloaded OS and tools; and compliance with XPG4, Motif 1.2 and OSF AES standards.

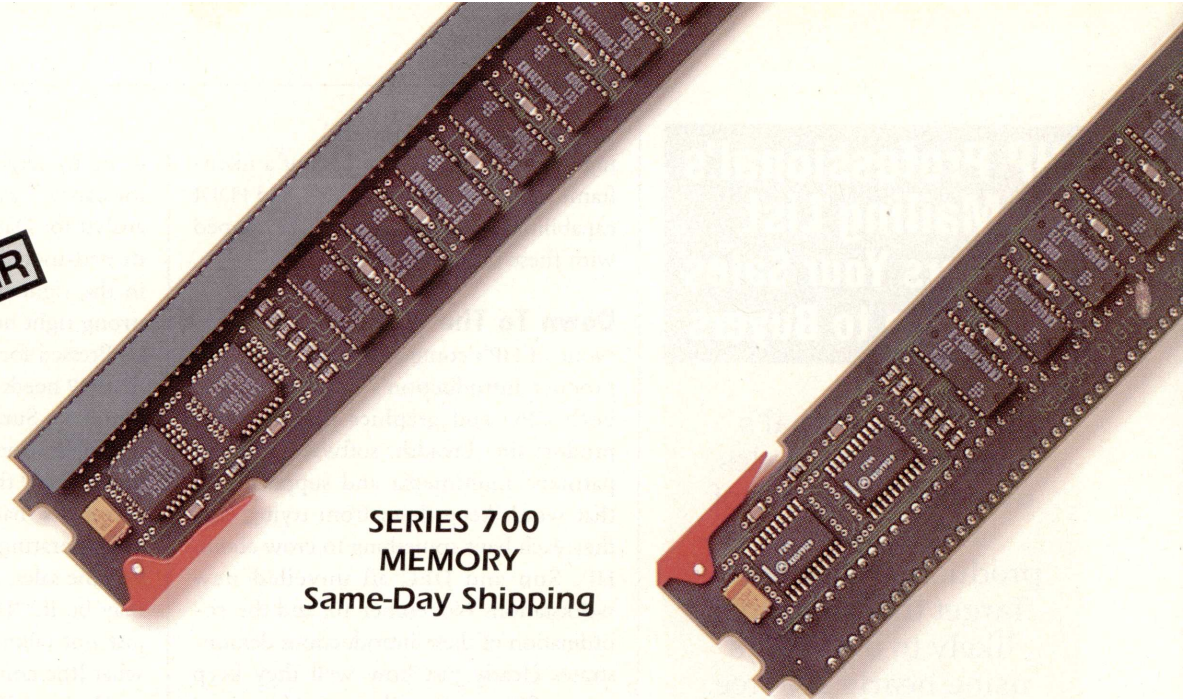
■ Yikes! HP introduces its flashy, integrated MPower family of multimedia capabilities priced to attract any workstation user not living under a rock. This includes CD/Stereo Audio, HP VUE user environment, lots of nifty icons, a wheelbarrow-load of 19 multimedia standards and more than 30 multimedia channel

partners. This is a very slick offering ready to roll on X terminals, Series 700 and Series 800 products or anybody's X-based workstation. Capabilities include HP SharedX, HP SharedWhiteboard, FAX, Audio Editor, Image Viewer, SharedPrint/UX, PostScriptViewer, Multimedia Mailer, stereo headset, microphone, support for DeskScan/UX and Video Live Option, all for \$495 (client) or \$1,495 (server). Watch for more on this hot stuff in an upcoming issue.

■ All this lands on top of the cluster computing announcement from HP and Convex Computer Corp. The offering combines Convex cluster software and integration hardware with HP Series 700 workstations to build modular supercomputers for mainframe-class comput-

MODEL	HP 715/33	Sun SPARC- sation LX	Sun SPARC Classics	IBM 220
CHIP	PA-RISC 7100	microSPARC	microSPARC	POWER
CLOCK SPEED	33 MHz	50 MHz	50 MHz	33.3 MHz
SPECfp92	45.0	21.0	21.0	26.1
SPECint92	24.2	26.4	26.4	16.6
INT. MEMORY	8-192 MB	16-96 MB	16-96 MB	16-64 MB
MAX STORAGE (int/ext)	70 GB	424MB/ 21 GB	207 MB/ 21 GB	8.5 GB/NA
BASE PRICE (diskless mono)	\$4,995	NA	NA	\$5,945
BASE COLOR (diskless)	\$5,695	NA	NA	
BASE COLOR (with disk)	\$7,395 525 MB disk	\$7,995 424 MB disk	\$4,295 207 MB disk	\$8,475 160 MB disk
SPECfp92/\$1,000 diskless mono	9.0	NA	NA	4.3
SPECfp92/\$1,000 color & disk	6.0	2.6	4.9	3.1
SPECint92/\$1,000 diskless mono	4.8	NA	NA	2.7
SPECint92/\$1,000 color & disk	3.2	3.3	6.1	2.0

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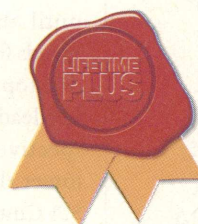
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Comprehensive Selection

HP Series 9000	MB	1	2	4	8	12	16	32
HP-200/310/320		■	■	■	■			
HP-319				■	■			
HP-330/350/370				■		■		
HP-332				■				
HP-340				■				
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HP-382				■	■		■	
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ing power at 1/10th the cost of a main-frame. The blazingly fast SCSI2 and FDDI capabilities listed above were developed with these clusters in mind.

Down To The Wire

None of HP's competitors can match this product introduction's combination of both CPU and graphics performance, product line breadth, software, channel partners, multimedia and support. But that won't keep them from trying, and they each have something to crow about. HP, Sun and DEC all unveiled new workstations November 10, and the coordination of these introductions demonstrates clearly just how well they keep secrets from one another.

At press time, DEC insisted on playing peek-a-boo with its first Alpha-based workstations, sending out charts detailing many things we don't care about (like clock speeds) weeks in advance, but withholding performance specifications until the last possible minute. Clock speeds for the DEC 3000 AXP 400 and 500 desktop workstations come in at a market-leading 133 MHz and 150 MHz respectively, but overall performance is lower than HP's at 112 SPECfp92 and 65 SPECint92 for the 400, and 126 SPECfp92 and 74 SPECint92 for the 500. At \$14,995, the AXP 400 is out of the entry-level competition at the hot end of the market, but it will likely make a lot of long-suffering DEC fans very happy anyway. Price-performance is a competitive 7.4 SPECfp92/\$1,000.

Similarly, while the outside world buzzed about new Sun workstations at the high and low ends of its product lines, the vendor seemed unable to convey the facts. Best guesses were a modest increase at the high end and another price cutting round at the low end. And this would set another low-end price point for the firm that still leads the market, if not the performance derby.

IBM's introductions last September place it in the thick of the market with a solid line of workstations, but without the performance edge of HP's line, and lacking some of the extras.

Market analysts clearly are pleased with HP's latest. "HP did what it needed

to do by staying the leader in price performance," says Laura Segervall, senior analyst for Dataquest, San Jose. She credits end-user studies for helping HP steer in the right direction. "HP looks really strong right now."

Pressed for a critique, Segervall notes that HP needs to promote ease of migration from Sun to HP, making it easier to get applications moved to PA-RISC platforms from the other guy's boxes. She also notes that HP needs a crowd-pleasing operating system to attract higher volume sales, and suggests Windows NT may be it. "HP has NT in the lab; [it's] just not talking about it. HP-UX is still what [the company] is pushing."

George Weiss, vice president of midrange strategies for the Gartner Group (Stamford, CT), gives HP high marks as well. "It's hard to see any cracks in [the company's] armor," he says. The new products will continue the status quo, with Sun treading water while both HP and IBM stroke along their efforts to catch up, and DEC tries to remember how to swim.

Just for fun, we placed Weiss in charge of HP's workstation business for two whole minutes. In that time, he:

- Launched an even more aggressive low-end pricing scheme because HP is still "a bit pricey."
- Chased HP managers around the block, yelling at them to market more aggressively and offer customers more.
- Encouraged more combined sales of 700 workstations with 800 midrange systems in package deals.
- Expanded simplified Model 715 packaging across the 700 line to save manufacturing and support costs.

With these ideas in hand, we quickly fired Weiss to control costs. Back in his analyst position, the undaunted Weiss predicted a shakeout of workstation firms in the UNIX market as the big four listed here gain control of 80 percent of the market.

At last check, Clinton was huddled with his chief workstation advisors, getting the latest UNIX intelligence in preparation for the big decision on situation room gear — stay tuned. ■

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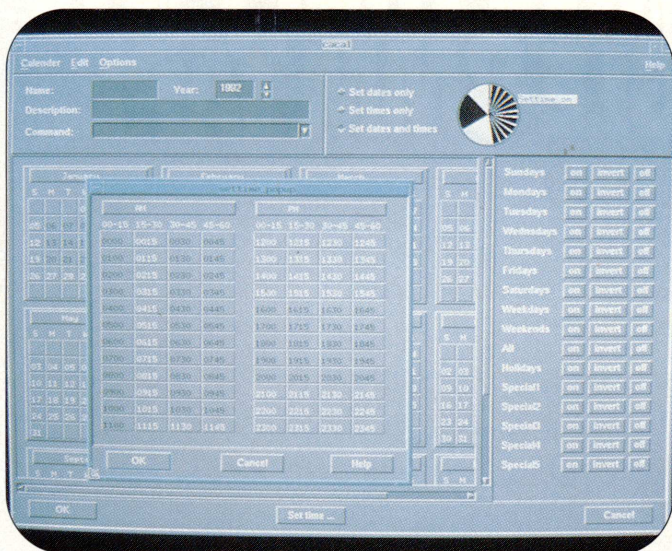
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Bust A Move



Computer Associates Gets Busy With UNICENTER For UNIX Workstations And Servers

Yo! Word is your mainframe has reached saturation. Time to upgrade to a bigger box for even bigger bucks, right? Ever consider a UNIX workstation to offload applications affordably? The price/performance is there, but the powerful mainframe tools you depend on are nowhere to be found. Until now, homeboy.

If you've delayed moving mission-critical applications to a workstation, UNICENTER from Computer Associates (CA) might convince you that now is the time to bust a move to a UNIX box.

UNICENTER for UNIX is CA's solution to application offload. Simply put, it integrates mainframe applications into a cost-effective UNIX environment.

Jeffrey Stilwell, senior systems engineer for CA, says, "CA sees a shift from monolithic mainframe to distributed processing information management. People [familiar with] a mainframe will

have the background to operate UNICENTER, and those completely new to the environment can gradually learn the system."

UNICENTER delivers a battery of administration tools through a point-and-click windows environment. CA divides the program into five major areas: security, control and audit; automated storage management; automated production control; performance management and accounting; and data center administration.

Most impressive were the program's security features. UNICENTER's security covers system entry validation, resource and facility access control, user registration, user and resource audits and system integrity.

Automated storage management addresses the extended data and media management issues of the data life cycle. This includes backup, archive, restore, recovery, movement, maintenance, retention and monitoring. Automated production control governs the realm of work load management such as load balancing, batch queue, console and report management.

Performance management and accounting controls resource accounting, chargeback of consumption and systems performance monitoring. Data center administration provides helpdesk and problem management.

Brent Moore, computer specialist for Brigham Young University, explains, "UNI-

CENTER made us feel more comfortable moving to UNIX." Moore, who controls IS for the school's financial services, says the university, a CA mainframe client, was concerned by the lack of quality tools on the native UNIX platform. "It's encouraging that CA provides UNIX applications, because they understand the requirements of the mainframe and can design what the users need." The university, which is a beta site for UNICENTER for UNIX, runs the product on its HP 9000 Model 827.

Moore says the university considered single point solutions, such as backup schedulers, in addition to CA's offering; however, he maintains, "UNICENTER provided a complete set of fully integrated tools."

While UNICENTER makes UNIX a viable solution for Brigham Young, it won't be the only platform on which the university will implement the program. As Moore explains, "We have a variety of computing platforms. The fact UNICENTER will eventually be available on other platforms such as NetWare, in addition to the HP 9000, means we can control our entire production cycle with just UNICENTER." — *Charlie Simpson, Technical Editor*

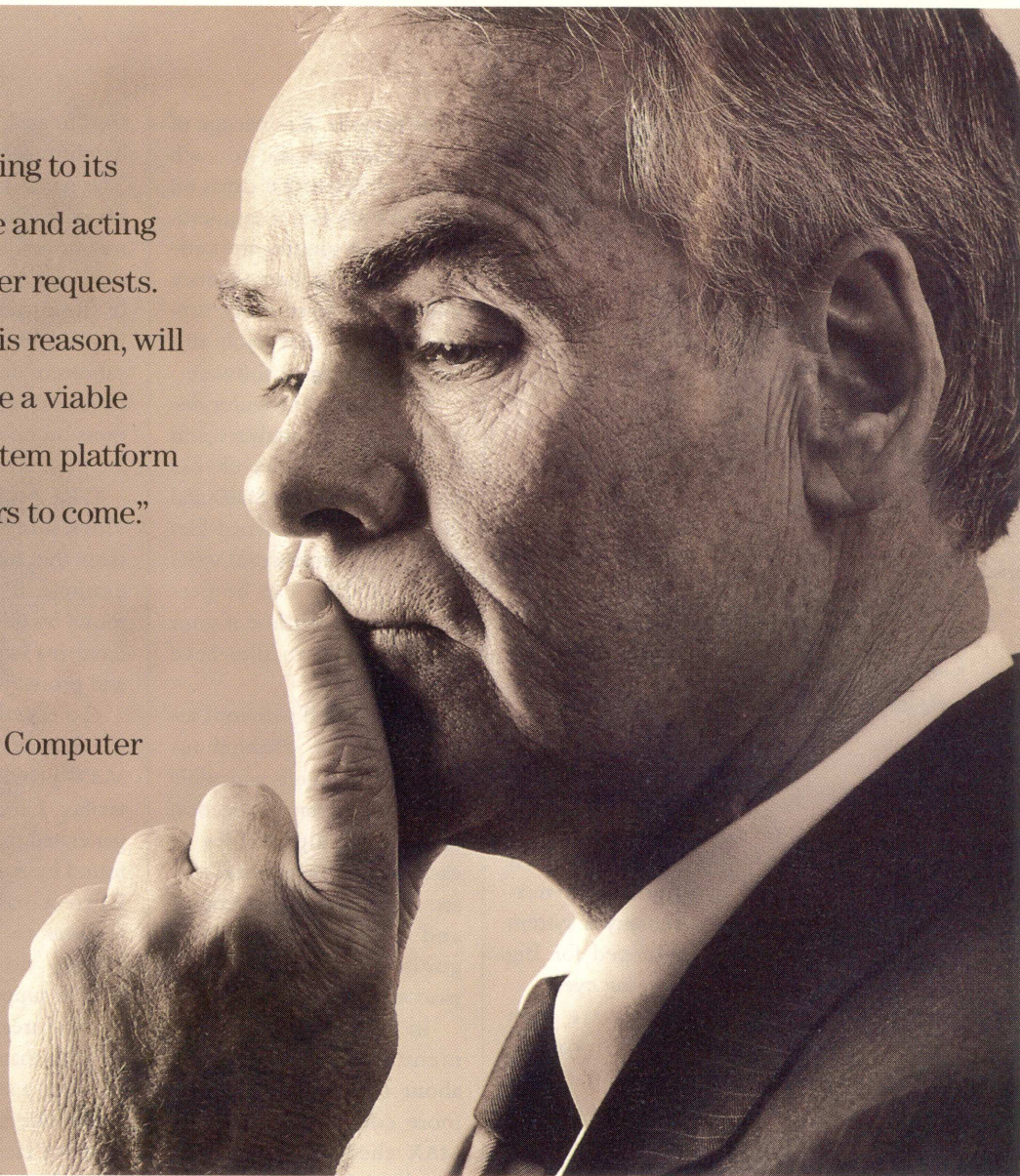
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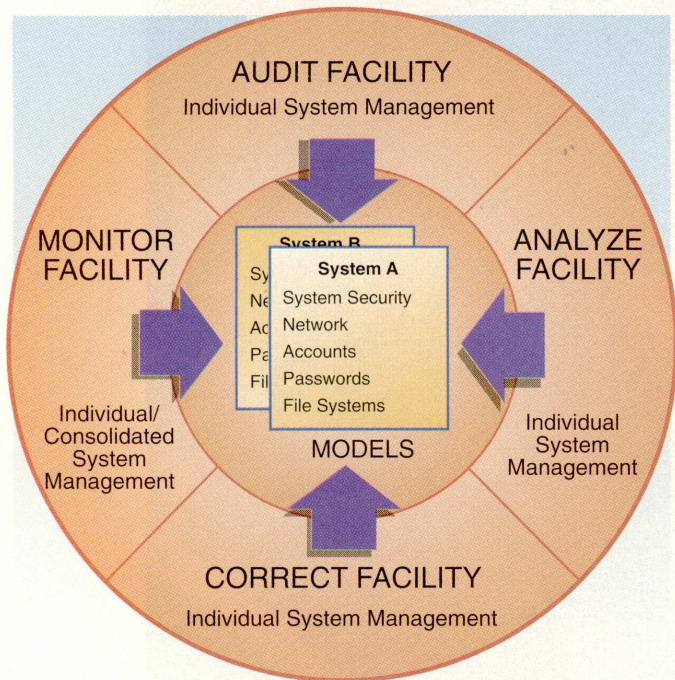
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Big Brother Is Watching



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Management Tool
Keep An Eye On
Your Distributed
Enterprise Network

Don't worry, 1984 is long gone, and Big Brother never came to pass. But when it comes to monitoring network access, many a system manager has longed for Big Brother's all-seeing eye.

DEMAX Software (San Mateo, CA), has answered the call for a practical solution for today's distributed security challenges with SecureMAX 3.0. SecureMAX's facilities let you audit, analyze, correct and monitor five major categories of security concerns across your heterogeneous network, all from a central HP workstation.

A major component of SecureMAX is dubbed the "central software console." SecureMAX's Motif-based point-and-click interface allows system managers to establish and monitor security across an entire network without having to run from

node to node. Knowledge of commands specific to each flavor of UNIX that exists on the network is not required. The station running the central console gathers security information from other network nodes that each run SecureMAX agent software.

SecureMAX provides detailed security analyses and reports. SecureMAX checks files particularly for SUID and SGID settings, unowned files and for files with world write access. A CRC can be performed to determine if your operating system files have been modified.

Account and password security checks disabled accounts or accounts accessible by multiple users. Protection and ownership of files in each user's home directory are checked. Stale accounts and accounts with easily guessed passwords or no passwords also are reported.

In a networked environment, security (like just about everything else) gets more complicated. SecureMAX checks remote access whether it be by UUCP, NFS or through such facilities as rlogin.

SecureMAX uses a modeling approach to analyze and report on security activities. This allows managers to create a baseline level of security with which they're happy. The baseline then is used to assess the current security level. Models are created by the security manager and can be as stringent or as lenient as desired.

Four major facilities are

used to establish and maintain baseline security standards. The Audit facility does a full security check of the areas mentioned above, providing summary and detailed reports of the current security level. Explanations and the implications of discovered security problems and recommendations on how to fix the leaks are presented.

The Analyze facility provides more specific detail than the Audit facility. For example, it will list the files found by the Audit facility to have inadequate ownership and protection settings.

To ease the burden of fixing security holes, SecureMAX provides the Correct facility. Corrective scripts are generated to fix the problems found by Audit and Analyze. Correct has built-in safety features to ensure that the scripts do exactly what they're supposed to and only in those areas specified by the security manager.

Once a security baseline is established, SecureMAX's Monitor facility tracks activity and reports any changes that indicate a degradation of security. Monitoring can be done on an individual node basis or network-wide. Monitor's reports can be used as a basis for updating your baseline model as security needs change.—David B. Miller, DP Labs Manager

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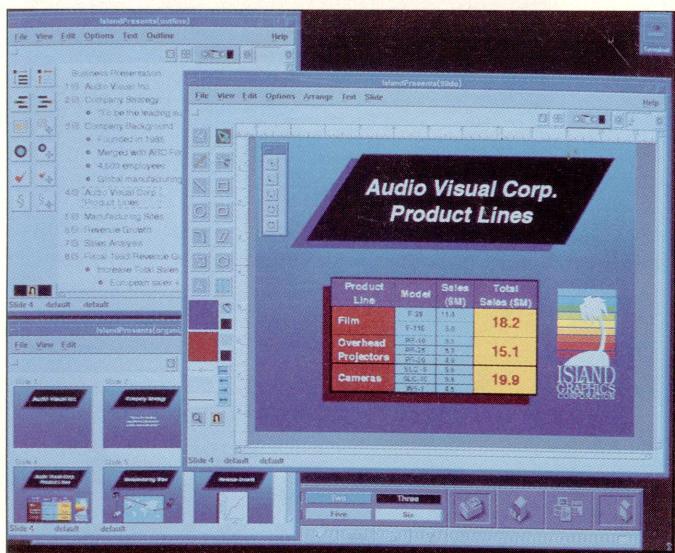
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An old, Chinese proverb states: I hear, I forget; I see, I remember; I do, I understand. Any professional who has reason to give a presentation would be wise to keep this adage in mind. The success of your next presentation could be enhanced with Island Graphics' IslandPresents, a multimedia presentation graphics package for HP 9000 workstations running HP-UX and OSF/Motif.

Workstation users now can clear their desktops of PCs or Macs in lieu of IslandPresents software, which incorporates six components for developing effective visuals. Dubbed a "slide factory" by Island Graphics' Marketing Manager, David Newman, IslandPresents automatically combines writing and drawing productivity tools to create overheads, 35mm slides or onscreen presentations.

The word processing function of IslandPresents is

found in its Outliner. Here, you create an outline of your ideas, which are defined as slide titles, bullet items, annotations or section headings. Unique to IslandPresents is the capability to assign titles and bullet items, while a slide is being created, with the bulleted list represented as text underneath the title. The product's Outliner and the Slide Editor components work together, so that as you cut and paste in your outline, your slides are then automatically realigned.

Once your outline (and therefore slides) are complete, you can use templates to create a uniform look to your slides. There are 90 designed templates that can be used as is or customized to fit your needs. Each template has five formats from which you can choose the one that best fits the text and graphic requirements of the slide. A Slide Format acts as a "master slide" and any change made to that master will be changed on all slides with similar format.

"Consistency is very important in a presentation. Being able to add or change your slides by altering just one, is much more efficient," says Kevin Orcutt, a systems analyst at Centech (Silver Spring, MD) who had previously used IslandDraw or CorelDraw on a PC to create corporate presentations.

IslandChart, IslandTable and IslandPaint, three components that can be used in conjunction with IslandPresents or as standalone prod-

ucts, enable you to add graphics, including pie, bar and line charts; create tables incorporating data and graphics; and produce original art or polish scanned images and screen dumps. You can further illustrate your presentation with a choice of 1,100 clip art images or use of IslandDraw 3.0.

Finally, the Organizer is a window that allows you to see your entire presentation at any stage in its development. Here, you can check for clarity in the order of the slides and the design consistency of your templates.

Orcutt has taken IslandPresents' organizing features a step further. "We've developed a corporate core presentation and then used the Organizer to reorganize and pull slides to create other presentations for specific customers."

Output can be done through PostScript, HP LaserJet and DeskJet printers. A single user license is \$995. IslandPresents runs on HP 9000 Series 300/400/700/800 workstations and Sun-4 and SPARCstations. — *Andrea Zavod, Associate Editor*

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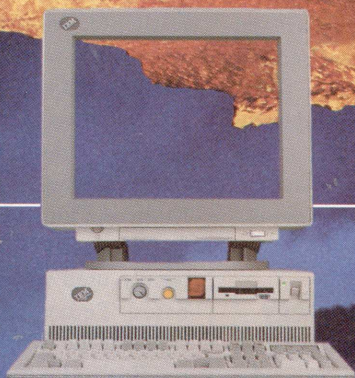
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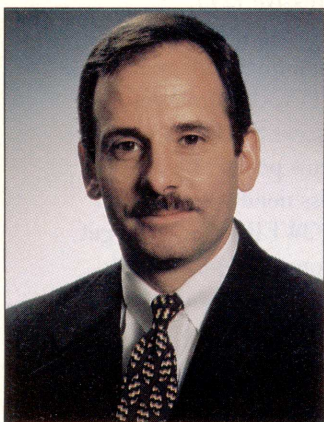


Once And Future King?

Cognos Deploys Rapid Product

Development Plans To Retain Powerhouse

Status Amidst Changing Market For 4GLs



"We're probably in the midst of the strongest product cycle we've ever had."

President and COO,
Jeffrey P. Papows

In the '80s, HP and Cognos Inc. (Ottawa, Ontario) went together like peanut butter and grape jelly. While not every HP 3000 site developed its applications using Cognos's flagship Powerhouse 4GL, sometimes it seemed as though almost everyone did. Today, Cognos still holds a phenomenal 63 percent share of the HP 3000 4GL market.

But grape jelly seems a little *declass * these days, and HP users have become hungry for newer, more versatile 4GL flavors. Faced with competition from the likes of UNIX 4GL companies such as Uniface and Progress Software and hampered by its own year-late entry into the UNIX market, the company is now suffering Wall Street's wrath.

With revenues down and a loss taken in the second quarter of FY 1993, some observers are wondering whether Cognos can climb back to its once inimitable position at the top of the HP 4GL heap.

Investment Strategy

Cognos has been moving on several fronts to make up for its deficiencies. Its goals: to

develop products that work in an open systems world and in a client-server fashion. Acknowledging that these goals are hardly unique, President and COO, Jeffrey P. Papows, says the company's strategy "sounds simple — as obvious as night and day." But, he adds, "It's a very complex transition, given the installed base."

Cognos will spend a whopping 16 to 17 percent of revenue on research and development in FY 1993. Papows reasons: "We're caught in the middle of this market trend; we had to pay it more than lip service." As a result, he says, "We're probably in the midst of the strongest product cycle we've ever had."

That cycle includes announcements this year of:

- **PowerHouse Version 7.03**, which runs on seven UNIX server platforms, including HP-UX, and which ties into Microsoft Windows clients, rather than character-based terminals.

- **A Windows-based client-server query tool**, called *Impromptu*, that works across multiple relational data sources and nodes.

- **PowerPlay**, a Windows-based management-level reporting product.

On the way is support for Motif and Open Look GUIs, and support for more commonly used relational databases. Today, Powerhouse supports development only on Borland's Interbase and DEC's Rdb relational databases, along with HP's rela-

tional ALLBASE. Server software that supports development on Sybase and Oracle databases will go to beta testing by year's end, says Papows, who warily promises shipment next spring.

In addition, Cognos must get its licensing fees down. "We have gotten a certain amount of pressure from the client base that we're overcharging for upgrades" to larger HP processors, says Papows. In response, the company is calculating upgrade discounts in a program Papows admits is "unadvertised."

The company has the resources — \$50 million in the bank and no debt — to sink into product development. Papows expects to return to profitability after "a couple more quarters of this transition." But the company won't slap together quick changes simply to satisfy Wall Street, he says: "We're not going to be driven by 90-day stock cycles." At the same time, Cognos is working frantically to ensure that competitors don't eat its lunch. — *Elaine Appleton, Contributor*

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IS OPENVIEW FOR YOU

BY ERIC SMALLEY

hen looking for a network management system, HP users may be tempted to forego the arduous process of evaluating different products and simply check off HP's OpenView on their next purchase order.

After all, OpenView is rapidly becoming the de facto industry standard for multivendor network management, and to a large extent, OpenView forms the basis of the Open Software Foundation's Distributed Management Environment. Even IBM is using OpenView as the foundation for its RS/6000-based NetView 6000.

HP's OpenView

Network Management

System Competes Head-On

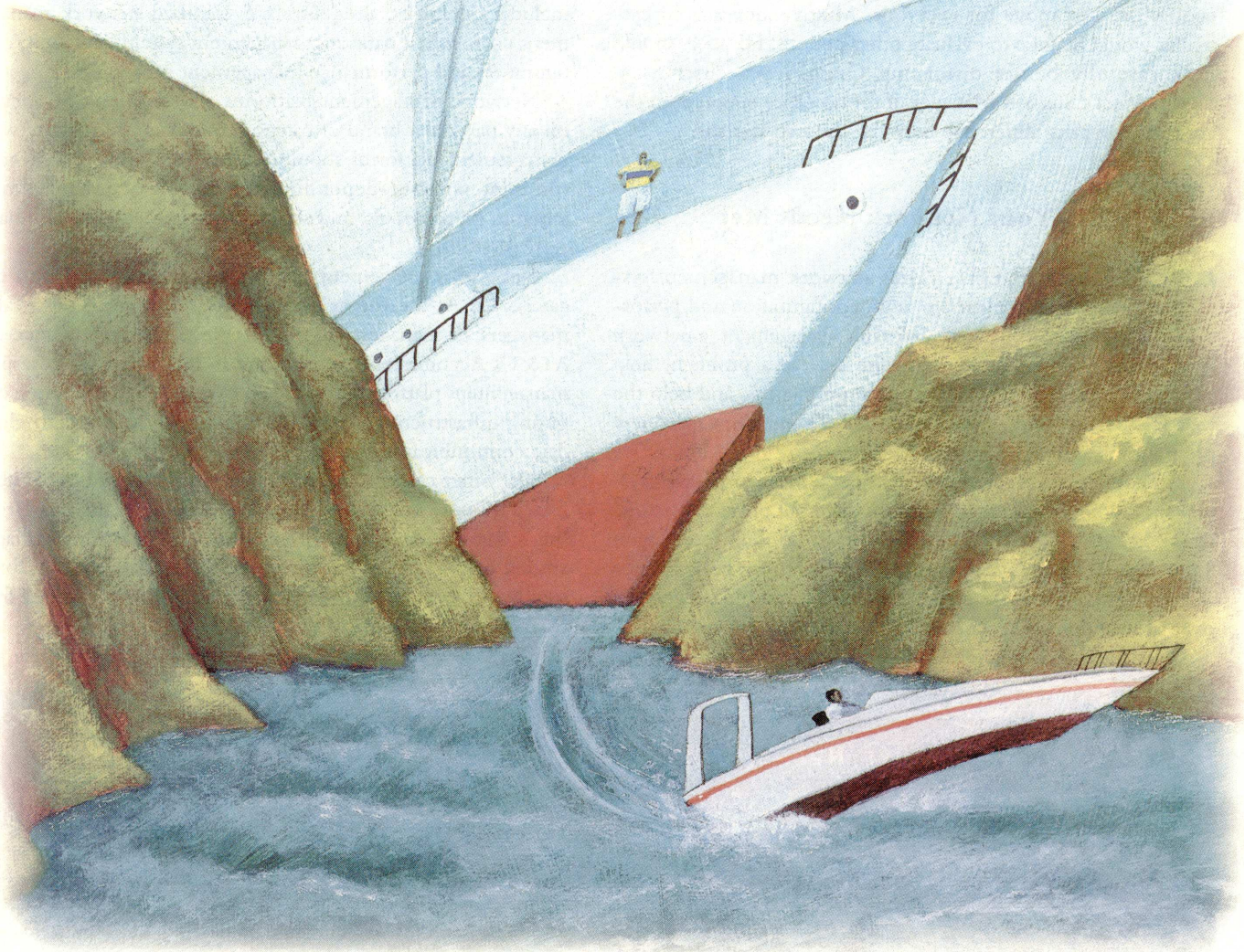
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S O F T W A R E F O R H P 9 0 0 0

CIRCLE 463 ON READER CARD

"If you're committed to HP already, and if your network management scheme is part of a larger plan that involves system management, you would be mildly crazy not to use OpenView for it," says Tom Nolle, president of CIMI Corp., a Voorhees, NJ-based market research and consulting firm.

Jumping on the OpenView bandwagon, however, isn't necessarily the best move for everyone. Multivendor sites in particular would be wise to evaluate other options. HP users should look carefully before dismissing OpenView's chief rival, SunConnect's SunNet Manager, if for no other reason than the considerable price difference between the two systems.

Get Your Network Needs Met

THE BASIC NEEDS THAT network management systems should meet are fault, configuration and performance management. For fault management, a network management system must notify the user of a problem, help the user identify what and where the problem is, and help the user fix the problem, according to Jeff Thiemann, OpenView program manager for Hewlett-Packard.

For configuration management, a network management system should not discover the network once but provide dynamic updating of the network configuration to respond to changes, Thiemann says. And, according to Thiemann, for performance management, a network management system should collect data over time and in real time, and display the data graphically.

OpenView and SunNet Manager are network management

platforms — a relatively new category of network management systems, designed to perform these basic management functions. The main attraction of network management platforms, however, is the ability to host higher level management applications such as trouble ticketing and accounting services.

Most network management platforms on the market today include a graphical user interface; standard network management protocols; a database management system; and fault, configuration and performance management capabilities.

Network management platforms also shouldn't be focused on any particular brand or category of device. Ideally, network management platforms should operate in a multivendor environment without depending on proprietary management schemes or protocols, and should be able to run on any hardware platform.

Network management platforms can be divided into two categories. At the top are the enterprise managers, also called managers of managers. IBM's NetView, DEC's DECMCC and AT&T's Accumaster Integrator are in this category. Enterprise management platforms provide an overview of corporate computing infrastructures, from mainframes to PC LANs to global data communications networks to voice networks.

The other category is LAN managers. Hughes LAN Systems Inc.'s Monet, Lexcel Inc.'s Lance, The Wollongong Group Inc.'s Management Station and NetLabs Inc.'s DualManager, among others, are in this category. These platforms are found mostly in UNIX-TCP/IP environments and have evolved from workgroup level management stations.

OpenView and SunNet Manager fall in between these cat-

PREDICTIVE NETWORK MANAGEMENT: AYE, THERE'S THE HUB!

In order to truly manage today's heterogeneous LANs, large volumes of management information must be moved from the subject (hub, card, router, etc.) to the manager (OpenView). This information must be moved rapidly, securely and reliably for true proactive management.

In today's larger networks the number of clients, each reporting management information, can create bandwidth problems. With OpenView, HP has developed a cost-effective, Simple Network Management Protocol (SNMP)-based approach to hub management called the Embedded Advanced Sampling Environment (EASE) architecture. HP's strategy is unique in that the company has incorporated statistical sampling techniques into each intelligent device on the network, including its own intelligent hubs.

This architecture allows HP to efficiently distribute the calculations on traffic and error conditions to the hubs. HP has done this in a software-upgradable system, allowing enhanced functionality without hardware changes.

HP engineers claim that, by embedding parts of the sampling and intelligence algorithms into devices being managed, they can begin building systems that will predict future network performance based

on performance history. HP says this approach gives a better view of network metrics than the technologies that allow only snapshots of the statistics. If this predictive embedded architecture can be implemented in systems that allow network administrators to predict and prevent failure points, it could become an extremely valuable tool.

While it would be great to know when your network will fail, most managers really want to know how to prevent those failures. HP intends to implement a "prescriptive network management system" that conceivably could tell any network administrator not only when a failure might happen, but what steps could be taken to prevent it.

These predictive and prescriptive network management software/products could help LAN administrators by freeing them from the daily worry of catastrophic network failures. As LANs and WANs gradually "become the computer" and as companies base their very survival on network technology, no fault and fault-tolerant hub management must become the standard, not the exception. — *Kevin Dohrmann. Dohrmann oversees advanced technical support for InaCom, a 1,000-location channel of computer centers, value-added resellers and system integrators.*

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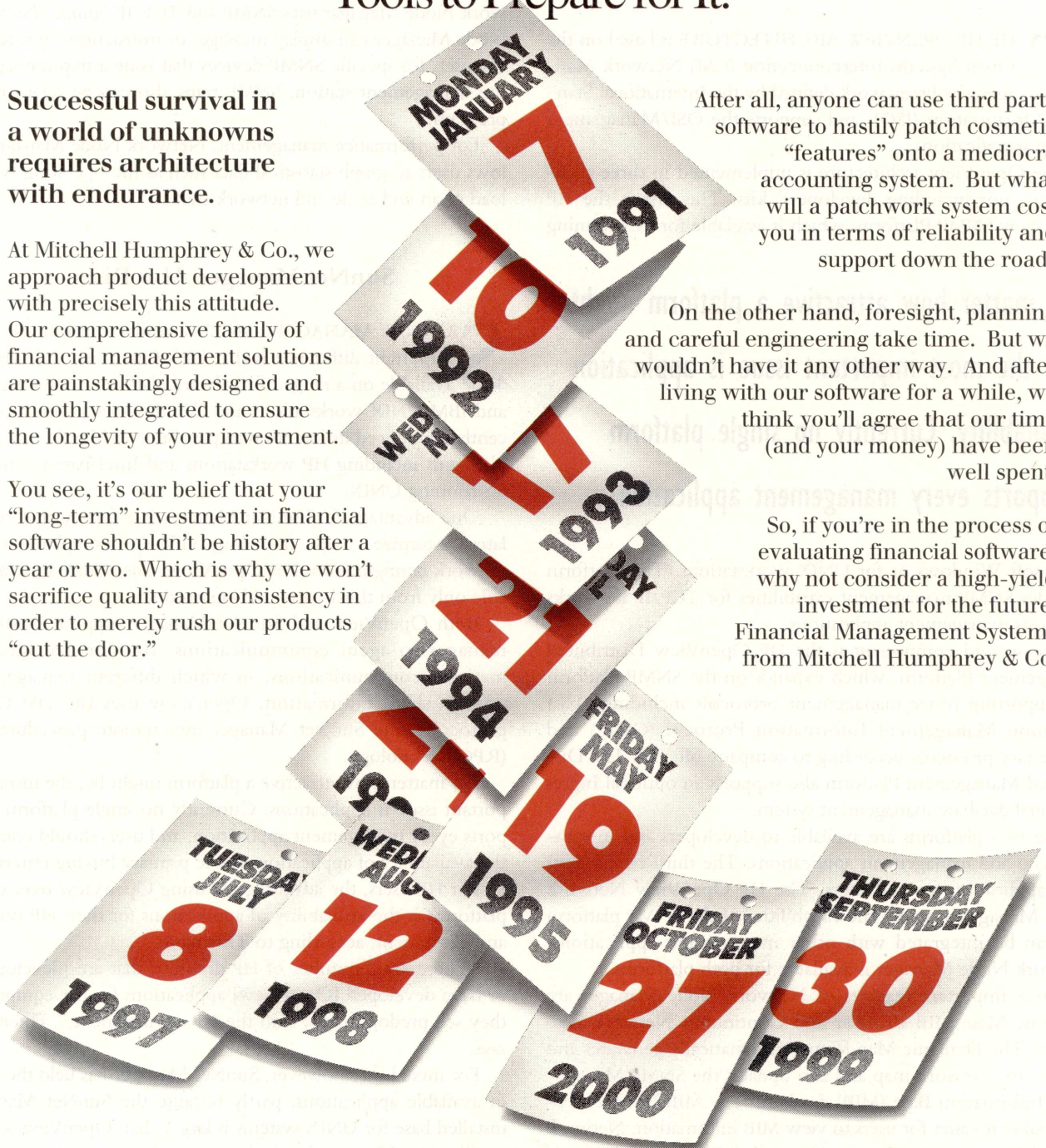
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egories, originally having been LAN managers, but now expanded to become enterprise managers.

An OpenView Overview

THE HP OPENVIEW ARCHITECTURE is based on the Open Systems Interconnection (OSI) Network Management Framework defined by the International Standards Organization (ISO), and supports the OSI/Management Forum specifications.

The OpenView architecture is implemented in three components, not including developers' kits. The first is the HP OpenView SNMP Platform, which is available for PCs running

No matter how attractive a platform might be, the most important issue is application availability. Currently no single platform supports every management application.

Microsoft Windows or for UNIX workstations. This platform provides SNMP management capabilities for TCP/IP networks and hosts management applications.

The second component is the HP OpenView Distributed Management Platform, which expands on the SNMP platform by supporting other management protocols including OSI's Common Management Information Protocol (CMIP) and proprietary protocols, according to company officials. The Distributed Management Platform also supports an optional Ingres relational database management system.

The two platforms are available to developers and integrators who add management applications. The third component is an application for end users. The HP OpenView Network Node Manager provides the capabilities of the SNMP platform and can be integrated with other management applications. Network Node Manager is available for both platforms.

Three important features of Network Node Manager are Dynamic Map, MIB Browser and Continuous Network Discovery. The Dynamic Map feature automatically generates and updates the network map and also updates the SNMP Management Information Base (MIB) database. The MIB Browser feature makes it easier for users to view MIB information. Network Node Manager's Continuous Network Discovery feature automatically adds or deletes nodes as they are added to or taken off the network.

Another important feature of Network Node Manager is the Application Builder, which allows users to customize the Net-

work Node Manager application. Network Node Manager also provides a compiler to more easily incorporate vendor specific MIB extensions.

Network Node Manager's other features are similar to those of other LAN management systems. For fault management, Network Node Manager uses SNMP and TCP/IP "ping." Network Node Manager can display messages or instructions, written by the user, for specific SNMP devices that issue a trap message to the management station. SNMP traps also can be set to run a program.

For performance management, Network Node Manager allows users to graph statistical data such as the operating system load of an end node and network traffic.

SunNet Manager Also Rises

SUNNET MANAGER OFFERS similar capabilities. One important difference is that HP's OpenView is currently available on a range of hardware platforms including Sun and IBM UNIX workstations and Windows PCs. But Sun recently announced its intention to port SunNet Manager to other platforms including HP workstations and Intel-based computers running UNIX.

One advantage for SunNet Manager is a feature that correlates customized maps, including building floor plans, to the network configuration. For OpenView, this feature set is available only from third-party add-on products.

Both OpenView and SunNet Manager support SNMP for manager-to-agent communications. But for manager-to-manager communications, in which different management stations share information, OpenView uses the OSI CMIP protocol while SunNet Manager uses remote procedure call (RPC) technology.

No matter how attractive a platform might be, the most important issue is applications. Currently no single platform supports every management application, and users should consider the availability of applications as the primary buying criterion.

For HP users, the advantage to using OpenView over other platforms is the availability of applications for their HP systems and equipment, according to Thiemann.

"There are a number of HP divisions that are [developing] or have developed [OpenView] applications for the equipment they sell predominantly into the HP environment," Thiemann says.

For mixed sites however, SunNet Manager has held the edge in available applications, partly because the SunNet Manager installed base for UNIX systems is larger than OpenView's.

"SunNet Manager has had more applications running on it and there are more devices you could manage using SunNet Manager," says Janet Hyland, director of network strategy research for Forrester Research, a Cambridge, MA-based market research firm. "But we're seeing a pretty strong shift in the

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HP's BIG TENT STRATEGY: OPENVIEW SOLUTION PARTNERS

In keeping with the industry trend toward multivendor, multiplatform distributed computing, the number of network management applications has grown exponentially in the past few years. During that time, HP has done its best to keep its OpenView strategy open enough to work with all of these applications.

Indeed, the company's goal has been to build a broad, standards-based coalition of products that's inclusive enough to manage diverse proprietary network architectures, such as DECnet, IBM SNA and Novell NetWare, yet specialized and powerful enough to automate sophisticated network management tasks.

At the October INTEROP show in San Francisco, HP had no fewer than 15 Solution Partners on hand to highlight the breadth and depth of network management options that OpenView supports. Among the Solution Partner products either presently or soon to be integrated with OpenView are:

ki Research's openDNM — Provides a variety of Digital Equipment Corp. network management services, including support for observance, configuration and control of DECnet Phase IV and LAT networks, via graphical user interface or command line interface. Graphical display of DECnet and LAT topologies, as well as status characteristics, counters and performance information, make it possible for openDNM users to monitor Digital systems as well as systems from other vendors from within a single OpenView window.

Network Edge's StationView and ServerView — Allow users to monitor and manage Novell clients and servers from central OpenView console or from any DOS workstation on the network. Scheduled for release in the first quarter of 1993.

Network Computing's LANExam — Provides Windows-based management for NetWare. A module of Network Computing's comprehensive LANAlert system management suite, LANExam supports services such as proactive configuration, inventory and performance management, for all NetWare nodes, including workstations, servers and routers.

Peregrine System's OpenSNA — Manages IBM multiple domain SNA networks from within OpenView. OpenSNA provides users with the ability to connect IBM MVS hosts to the OpenView Network Node Manager via TCP/IP or LU6.2 and integrates icons representing SNA resources into OpenView's graphical display of network topology.

Boole & Babbage's COMMAND/Post — Allows users to manage non-standard, legacy systems from within standards-based OpenView environment. COMMAND/Post provides a single point of contact for management of proprietary mainframes and minicomputers as well as non-standard network management equipment.

Hughes LAN Systems' Enterprise Hub Management Software — Hughes announced plans to deliver a low-cost Windows/DOS-based network management product targeted at small- to medium-size networks and integrating management of Hughes Enterprise Hubs. Availability is scheduled for first half of 1993.

LANNET Data Communications' MultiMan/OV — Graphical

user interface version of LANNET'S MultiMan network manager, which allows users to manage LANNET hubs and other SNMP-compliant devices from within OpenView. MultiMan/OV will be available in Q2 1993.

Coral Network Corporation's CView Management System — Integrates high-end internetworking support, including Coral's Broadband Enterprise Switch, which supplies high-performance bridging and routing for mission-critical, multiplatform internetwork backbones. Coral also supports SNMP-compliant agents on all its networking products, which enables them to be managed by OpenView or other SNMP-based network managers, such as Cabletron's Spectrum product and SunNet Manager.

Teknekron Communications Systems' NMS Core — Provides object-oriented, C++-based development environment for design of network and operations management applications. Integration with OpenView will enable NMS/Core developers to take advantage of OpenView supported standards such as the Open Software Foundation's Distributed Management Environment (OSF/DME), X/Open's Management Protocol (XMP) and the Open Systems Interconnection's (OSI) Common Management Information Protocol (CMIP). NMS/Core is designed specifically for the development of large-scale telecommunications management applications.

3Com's Bridges, Routers, Structured Wiring Hubs — A broad range of 3Com network devices now integrate support for OpenView and OpenView-based tools to simplify network management.

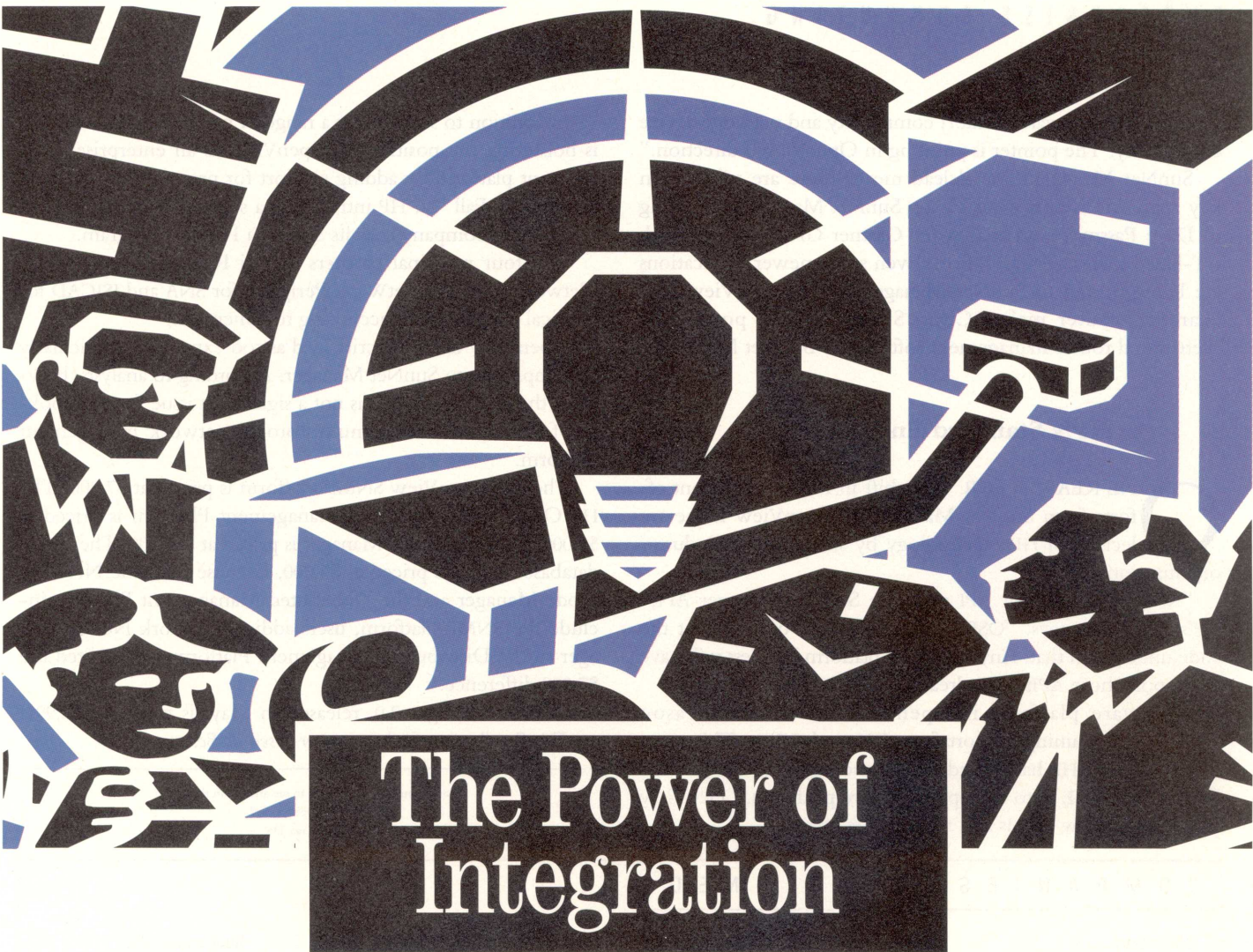
Gandalf's Passport — Supports a dual SNMP/OSI standards-based architecture that provides a global LAN/WAN internetworking management capability from a single OpenView window. Users can plot multilevel graphical views of their network, from a global perspective down to a single desktop system. Performance and bandwidth usage can be monitored across local and wide area networks.

Networx' Paradigm — Automates network management and troubleshooting functions, including problem identification and tracking.

Fibermux' LightWatch/Open — Provides detailed configuration and control for Fibermux' Crossbow intelligent hubs and Magnum100 fiber-optic backbone multiplexors.

Bytex' Series 7700 Intelligent Switching Hub — Integrates support for OpenView's core management services and menu structures into fault-tolerant smart hub.

ISICAD's COMMAND and COMMAND HelpDesk — COMMAND documents network resources and graphically represents physical structure and characteristics of enterprise network, including physical location of network devices. COMMAND HelpDesk is a trouble ticketing application that automates workflow process for reporting network problems, coordinating support staff and tracking problem resolution. — Don Marks, Editor-in-Chief



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[independent software vendor] community and network device community. The pointer is pointing in OpenView's direction."

SunNet Manager's initial lead means there are still certain key applications only available on SunNet Manager, according to Dave Passmore, an analyst for Gartner Group, a Stamford, CT-based market research firm. Even some newer applications are being ported to SunNet Manager before OpenView. For example, router maker Cisco System Inc. is porting its NetCentral router management software to SunNet Manager.

HP's Standard Endorsements

ONE REASON FOR THE shift in ISV development efforts from SunNet Manager to OpenView is the selection of HP's technology by standards and industry organizations.

"X/Open chose our API over the SunNet Manager API," HP's Thiemann says. "OSF is using not only our API but the code underneath that. Anyone in the platform business will have to support those APIs. We already have them in product."

Hardware platform independence is another reason OpenView is gaining support from ISVs and OEMs, Thiemann notes. Because HP has ported the technology that was selected for the OSF DME onto multiple hardware platforms, OpenView has attracted new OEMs and resellers, he says.

In addition to support for a range of hardware platforms, HP is bolstering the position of OpenView as an enterprise management platform by adding support for proprietary protocols. At InterOp Fall '92, HP introduced a series of vendor alliances in what the company calls its Solution Partners program.

The four principal partners are Ki Research for DECnet, Network Edge for NetWare, Perigrine for SNA and ISICAD for physical management, according to Thiemann.

OpenView has been criticized as too expensive, particularly in comparison to SunNet Manager. According to analysts, however, the price difference is not a significant issue for sites looking for a multivendor, multiprotocol network management platform.

The HP OpenView SNMP Platform is priced at \$7,000. The HP OpenView Distributed Management Platform is priced at \$8,000. Network Node Manager is priced at \$15,000. The Ingres database option is priced at \$5,000. Because both the Network Node Manager and the Distributed Management Platform include the SNMP platform, users adding Network Node Manager to the Distributed Management Platform are credited the \$7,000 difference.

SunNet Manager 2.0, released in May, is priced at \$3,995. — Eric Smalley is a freelance writer based in Boston.

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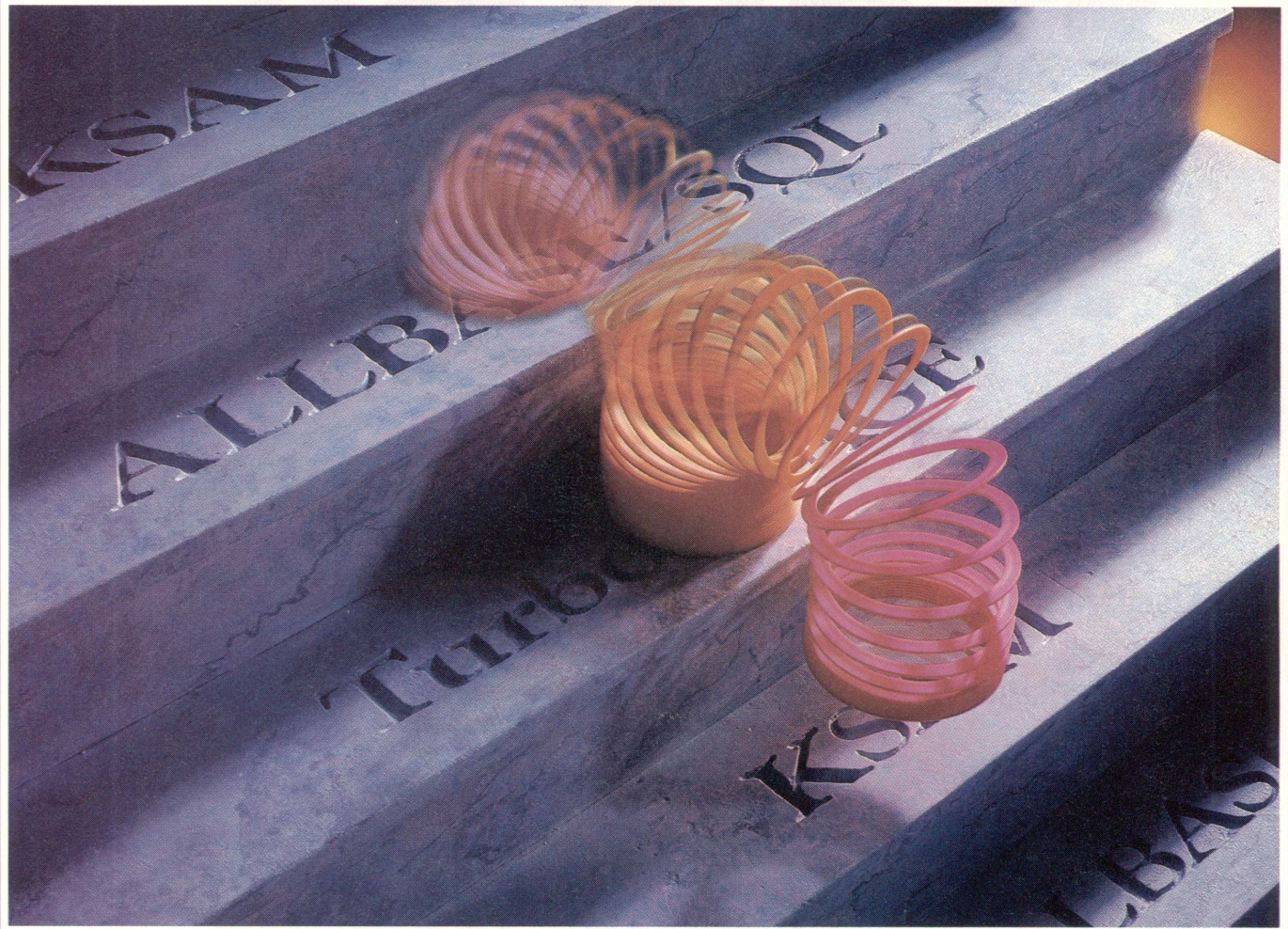
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Internetworking technologies and communications standards may be the fastest growing segment of the computer industry. At the age of 10, the X.25 datacommunications interface standard could be considered over the hill as far as networking options go. Some say it's time to make way for high-powered newcomers like Frame Relay and Asynchronous Transfer Mode (ATM). But the sheer longevity of X.25 in a market where new technologies appear every year suggests that many network managers think otherwise.

X.25 is a true networking standard, developed by the Consultative Committee on International Telegraphy and Telephony (CCITT). And in the early days of wide area networks (WANs), it was the only solution available. At the time, X.25 operated at speeds up to 56 Kbps over standard analog telephone lines, and it could perform adequately over poor quality telephone lines.

Originally, the equipment and leased lines required to create an X.25 network were too expensive for most companies to build their own private networks. But international datacom

BY TIM CAHOON

The arrival of new technologies doesn't mean that X.25 is no longer a viable networking technology.

services, such as Tymnet and Infonet, quickly built large-scale Packet Switch Networks (PSNs) using X.25. These PSN providers then offered access to their networks to companies needing to link remote sites.

Applications for these X.25-based services developed quickly. But by far their most common function was to provide a company's remote sites — typically serving only a few users — with access to corporate applications on a centralized host computer. Dumb terminals provided the user interface, and they were connected to the network via an X.25 device called a PAD (Packet Assembler Disassembler). Host-to-host connections across the network were generally limited to applications requiring bulk file transfers.

Needless to say, the world has changed a lot since then. The RISC architecture revolution of the '80s gave us tremendous processing power at lower costs and facilitated the proliferation of distributed computing. Suddenly, companies around the world found themselves networking more systems than ever before and moving more data between these systems. With these beefed up corporate LANs came new applications that required fast data pipelines — something that X.25 could not offer.

At the same time, changes in the communications industry, specifically deregulation and competition, forced prices to drop and prompted carriers to add new services. The national telephone network began to replace old analog with digital data lines offering error-free data rates greater than greater than 56 Kbps. Frame Relay, SMDS, ATM and other fast-packet technologies that could outperform X.25 appeared on the scene.

Datcom For The Rest Of Us

STILL, THE ARRIVAL of these new technologies didn't mean that X.25 was no longer a viable networking technology. In fact, the boom of new equipment and technologies meant price reductions for "older" services. For example, packet switches that sold for \$60,000 just four years

ago, now can be replaced with a more flexible and powerful model for less than \$10,000. The Hewlett-Packard Model 45 X.25 switch is an excellent example of the new generation of X.25 equipment.

With 10 or more years of experience running X.25 networks, the PSNs also have had the opportunity to build extremely reliable and proven networks. The combination of lower equipment and line costs has allowed the cost of PSN use to drop as well. As the costs go down, many smaller businesses now can afford the networking service to connect remote offices for electronic mail, database queries and file transfer applications.

Although many of the PSNs' major customers from the 1980s have moved on to newer, higher-speed technologies, thousands of new subscribers have arrived to take up the slack.

For example, companies requiring an inexpensive data link for credit card validation have turned to X.25. Rather than connect credit card readers via dial-up or leased line directly to a clearing house, these companies can take advantage of existing X.25 services from PSNs. A new nationwide set of X.25-based capabilities called Transaction Switching and Transport Services

WHAT AND WHERE IS X.25?

In his book, *Telecommunications and Computing*, datacom guru James Martin defines X.25 as the Consultative Committee on International Telegraphy and Telephony's (CCITT) standard interface "between a packet-switched data network and any user machine connected to that network." Sounds simple, right? X.25 is the CCITT's recommended means for establishing a terminal connection on any packet-switched network. The truth is that understanding what the X.25 interface is and where it's to be found on your network isn't quite as straightforward as it sounds.

According to Martin, the X.25 interface is located in various places across the network, depending upon where user devices (data terminals) are located and how they are connected to different network nodes. If the user device is located at the same site as the network node and the connection is hard-wired, X.25 resides at the connection between the user device and the node. In order for this type of connection to be successful, the data terminal or other user device must conform to the X.25 standard.

That may seem simple enough, but when the user device is remote, which is more typically the case on X.25-based public data networks, things get a little more complicated. If the user device accesses the network via modem, X.25 resides between the user modem and the modem at the packet network. In this case, as in the hard-wire connection, the user's device must support X.25.

But what about cases where the user terminal does not support X.25? Never fear, all is not lost. These devices simply require a Packet Assembler Disassembler (PAD) facility, which is also described by CCITT recommendations. The PAD facility resides between the non-packet-mode device (usually an asynch terminal) and the packet-switched network node and provides translation and linking services between the two.

(TSTS) is now being installed by telephone companies across the country (e.g., Southwestern Bell). This will reduce the cost and time it takes for each credit card approval even more.

Other new customers for X.25 can be found in the telecommunications and data security fields. Telecom companies and network services providers now use X.25 networks to monitor remote buildings and telecommunications equipment from central sites. The low bandwidth required to pass status messages from building monitors, security devices, and other equipment makes X.25 a perfect — and cost-efficient — fit for these security applications.

The Only Game In Town

GIVEN THE GLOBAL NATURE of today's economy, more and more businesses will have a need for international communications. Surprisingly, telecommunications within the United States are the best and most reliable in the world. For all our gripes, nobody has it better than we do. In fact, thanks to poor planning, unstable governments and lack of funds, many countries have terrible telephone systems. Digital lines and switches needed to support technologies such as Frame Relay won't be installed for years. X.25 remains the only game in town.

In most European countries, the government controls the post office and all communication services. Only the postal, telephone and telegraph provider (PTT) has the authority to say what equipment can be hooked to the phone system and how technologies are introduced. X.25 always has been popular in Europe, but today the major European PTTs are installing ISDN as their next generation network backbone. Frame Relay is also beginning to make a limited appearance. But agreement on pan-

European standards and acceptance of value-added network services offering high-speed alternatives may take time. It's useful to remember that in many European countries, it's still illegal even to use a modem not purchased from the local PTT.

Countries whose unstable governments prevent foreign investment pose even greater obstacles to new communications technologies. In Latin America, it's considered excellent if you have access to 2400 baud dial-up lines. Even Greece, a long-standing member of the European Economic Community, can only support 2400 baud lines. Unfortunately, this is very common throughout the world, and it is a situation that is sure to last well into the next century.

When establishing communications outside the U.S., PSN providers such as Infonet can provide many X.25-based services. The most important thing is to use their experience and connections within these foreign agencies to assist you in installing your network connections. Infonet has a somewhat unique position in that it is owned in large part by many of the major PTTs of the world.

Jean Francois Coudeyre, X.25 product manager of HP's Grenoble Network Division, offers words of wisdom for those contemplating a switch to Frame Relay, ATM or other network technology alternatives: "Productivity is the only reason to move to new technologies, not the technology itself. X.25 is available almost worldwide and is inexpensive to both provide and use." Keep this in mind as your company plans and develops future applications. It looks like X.25 is going to be with us for a good long time! — *Tim Cahoon provides wide area network and HP technical support for the manufacturing operations of a Fortune 500 company.*

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ALTERNATIVES TO X.25: HIGH SPEED MAY BE HIGH RISK

Frame Relay, ISD and ATM are examples of new communications technologies that depend on the newer, faster error-free lines to support cross-country, LAN-to-LAN interconnection. As new applications continue to appear, the requirements needed to support them grow as well. Bandwidths of 56 Kbps simply aren't fast enough to interconnect high-speed LANs. And, as multimedia applications become more commonplace, fast data pipelines will become a basic necessity.

The success of these communications technologies and use of their applications may rely on the resolution of several issues. Standards will be the first major hurdle. Not only will new standards have to be agreed upon to accommodate these technologies within the United States, but within Europe and Asia as well.

Another issue will be deployment of these new technologies.

Networks get deployed first where the greatest number of customers exist, i.e., large metropolitan areas like New York or Chicago. Network providers don't have the capital to implement LANs everywhere at once.

A third consideration is cost. New technologies usually cost more than mature ones because there is a limited supply of equipment, and manufacturers need to recoup their development costs.

The last concern, and perhaps the most important, is reliability. No matter how well you design your environment there always will be problems when new technologies are introduced. New and flashy can also mean unpredictable. After all, the learning curve on Frame Relay and its counterparts is just beginning. You may want to stick with a proven technology like X.25 until more technical expertise develops and new standards shake out.

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BY BILL SHARP

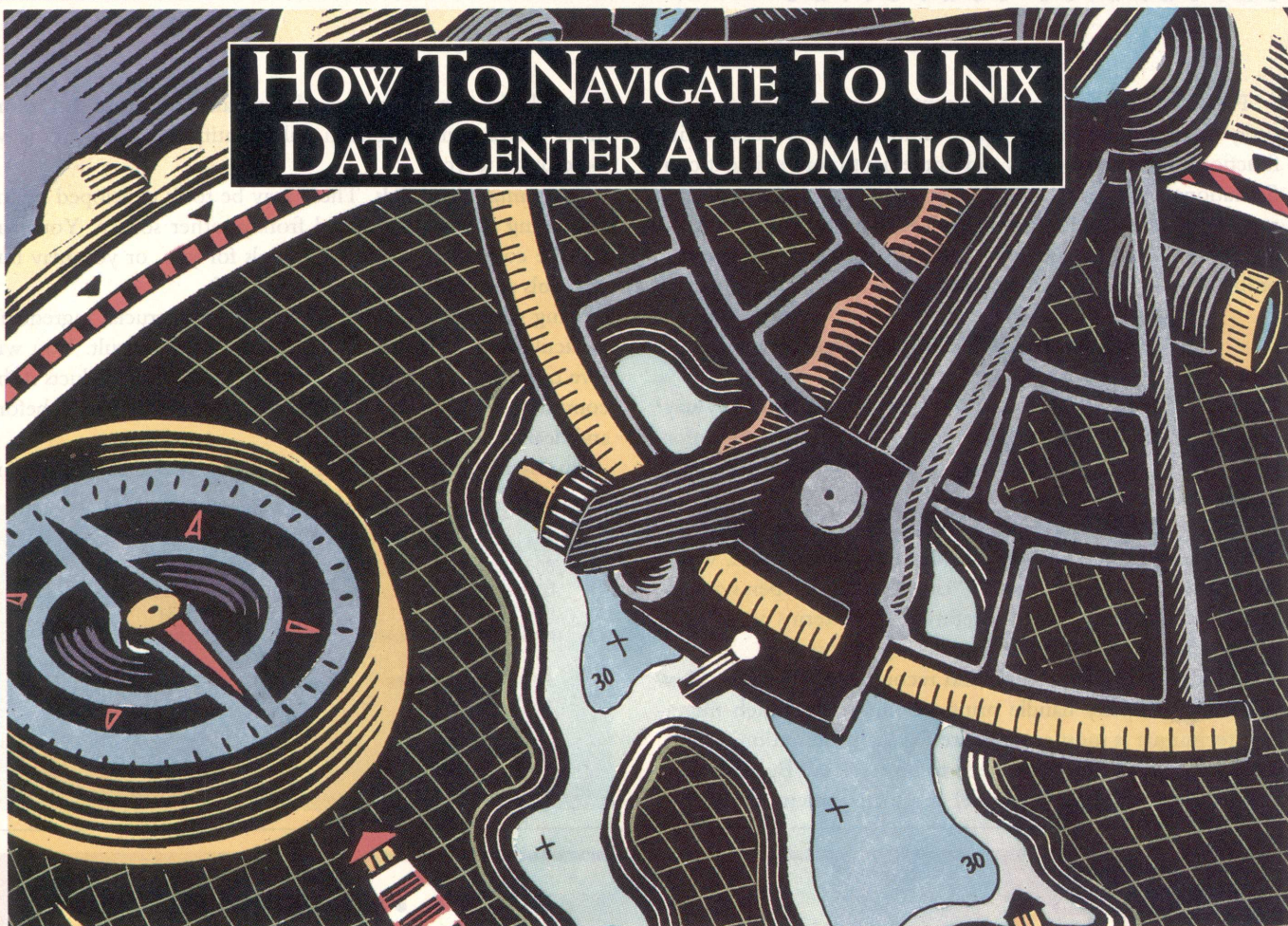
**Whether You're Implementing
A Client-Server LAN Or Offloading
A Mainframe Application, Consultants
And System Integrators Can Help
You Out In The Trenches**

A huge flash of blinding fire bursts overhead, easily visible even through your tightly closed eyes. Against the blazing backdrop of that light, you sense Joanne leaping into your foxhole as bits of circuitry and cabling rain down around you.

"That was a close one," she chuckles, wiping away part of an IBM decal that somehow affixed itself to her now-gritty forehead. "Just switched over the last three applications from the mainframe to the client-server system. The apps are running great, but we're catching a lot of flack out there." It's all in a day's work for Joanne, a client-server consultant who helps her customers downsize applications from their older mainframes. She's not quite superwoman, but it sure helps to have her expertise and experience when the flack starts flying.

OK, OK, so we exaggerate a little bit now and then. Even if the role of the consultant in system downsizing and application migration is somewhat overplayed, there's no doubt that these experts play an important role. Consultants report that their business is more demanding than ever, and it is booming. The good ones have plenty of work.

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Part of the reason for the recent rise of consultants is entirely practical. There are opportunities to move computing functions to smaller systems and implement more efficient configurations with more capable software. These changes often require expertise that simply doesn't exist inside your company. You could try to handle these challenges yourself, but it would probably take you longer and cost more.

The Best And The Brightest

WHAT IS THE ROLE of the consultant, anyway? Mark Symonds, vice president of Innovative Information Systems, Inc. (IISI; Norwood, MA), offers these consulting functions:

- Provide detailed information about downsizing and migration and explain the jargon. This includes agreed upon, working definitions for terms such as "client-server," "open systems" and "distributed database." Defining these terms in advance avoids possible misunderstanding during a project.
- Identify technical problems and recommend solutions. How will your company handle print spooling, and which migration technique is most appropriate for each application?
- Identify policy issues that need to be resolved. Because these problems may include personnel and management issues, they

generally fall outside the consulting team's expertise. It is more likely that a consulting firm will identify the issue, and leave its solution to you.

- Bring migration tools. These may be tools developed by the consulting firm or purchased from another source. You may pay the consultant to use these tools for you, or you may buy the tools and learn to use them yourself.
- Bring experience. This may be the most crucial ingredient, particularly in cases where the migration is difficult. You will save time, money and large quantities of antacid products if the consultant you choose has seen your specific problem before and dealt with it effectively.

In essence, the role of the consultant is to help you mini-

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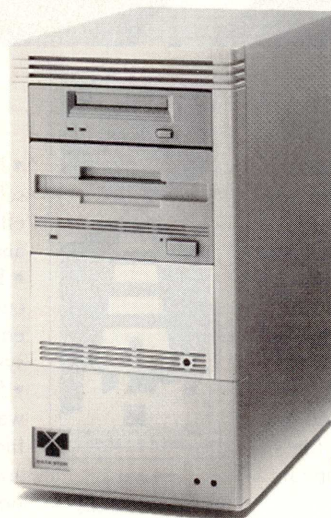
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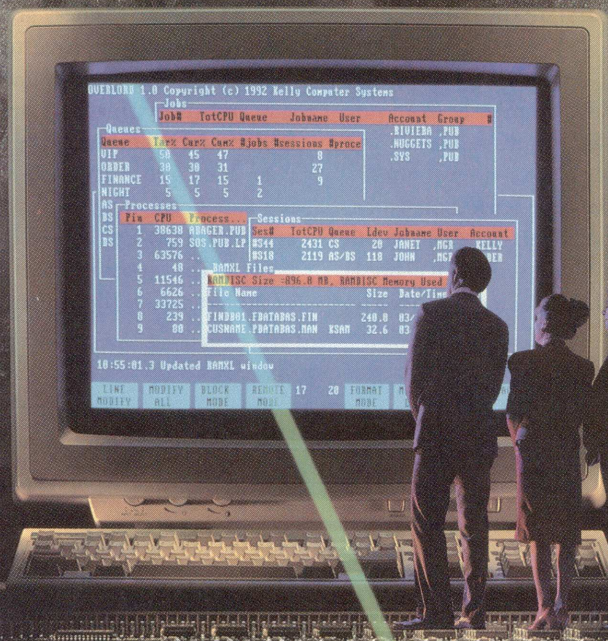
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Taking Care Of Business

WHILE MIGRATION AND downsizing consultants are paid to help clients move seamlessly from one computing platform to another, some of the consultant's most important work takes place before the technical integration tasks that we might associate with their work.

Technology is not the first concern when his firm begins working with a new client, says Harv Wells, senior vice-president with Wesson, Taylor, Wells and Associates Information

Technology Consulting (Charlotte, NC), "Our fundamental approach is to define what business needs the client is attempting to address," he says. "Once you get to the business issues, you have a core to build on, but until then, you're trying to build a system with blinders on."

The "business issues" are the aspects of the business the customer wants to improve to make his business function more effectively. These issues may include improving profits or cutting inventory, material or unit costs, says Wells. "Once you understand where you are heading, you go through the basic consultant processes such as investigation, review, interviewing and fact finding until you have enough raw information to assimilate into a plan. We couple that with our experience and provide the customer with a series of options, ranked in order of preference, with pros and cons for each option."

FROM BIG BLUE TO HP 3000: TRAILBLAZING AT LEVI STRAUSS

Jack LaBue, manager of product planning and logistics systems with Levi Strauss International (San Francisco, CA), had a massive job to do, and he needed help. Levi's U.S. operations use a large model stock management application running on an IBM mainframe. The software helps retailers predict how to buy and stock Levi products by keeping track of all sizes, colors and styles of Levi clothing. At the end of the year, stores can examine the record of what products sold best at what times of the year and predict purchases for the next year in order to improve their profits.

LaBue wanted this very successful application made available to Levi operations worldwide, but the locations outside the United States all use upper-end HP 3000 computers. The centralized U.S. application had to be migrated over to smaller and more practically sized midrange HP 3000 systems distributed around the world. "The software took years to develop on the IBM, and we wanted to leverage both the work that had been done on the mainframe software and the domestic success of the application," says LaBue. They wanted to get the software into use internationally as soon as possible, so they looked for consultants to get the job done.

Innovative Information Systems Inc. (IISI; Norwood, MA), sought and won the contract in partnership with HP because of its combined offering of expertise, experience and migration software. LaBue put the firm to work immediately. "Our time frame was to complete soup to nuts — with a pilot system up, tested and running internationally at our Scandinavian affiliate — within six to nine months," he says. "We kicked off the effort in June 1991 and had the pilot up in February 1992, so it took eight months to complete."

The effort was a success in the sense that the job was completed within the target period and the application now runs on HP 3000 systems. LaBue cautions, however, that there were times when the relationship did not work perfectly, noting that at times both IISI and Levi Strauss had made mistakes.

"Up front in the negotiation process with a consultant, [his] role needs to be defined clearly," says LaBue. "That role can be different in every project. We had four different parts of our organization

working on different pieces of the project, and we expected IISI to manage the process with them—that was unrealistic. We had multiple organizational structures and we had not given them the authority to make things happen, so it was unfair to give [consultants] that role. You need to clearly identify who is responsible for what."

The project, says LaBue, "Went like any pilot — we tested [the firm's] level of expertise." Just the size and complexity of a firm such as Levi Strauss makes it a challenge for any consulting firm working to help on a large project. "We tend to challenge technology. If the consulting firm says [it has] worked on a piece of software before, we will probably use every available feature of that product, and chances are [the firm has] not been challenged to that extent before."

You have to assume that at some point in the process, your partner in technology will encounter at least one unforeseen problem. In the case of Levi Strauss, the existing application was written in COBOL to run a DB2 database on the mainframe. Levi needed the application duplicated in MPE to run an ALLBASE database on an HP 3000 midrange. "Unless the consultant has experience in moving DB2 to ALLBASE and in converting CICS screens to HP VUE screens, and unless [he has] done that before in a multitude of scenarios, I can't feel comfortable that [he] can handle all of it," says LaBue.

In fact, IISI needed some help from HP, help that was a long time coming. In particular, says LaBue, translating data locking and security access features of the IBM code over to HP ALLBASE "seemed to cause a lot of problems. When two people tried to access the system at the same time, sometimes the system locked up. It took months to get around some of that, and it was HP's problem. I'm not sure we had an HP person who knew the functionality of ALLBASE until late in the project."

Ultimately, LaBue found IISI earned a score of 7.5 on a scale of 10. While customer needs vary greatly, for LaBue, "Speed is the whole item. If speed wasn't a factor I would do the job here internally, but I can't afford to take that time. I don't want to trailblaze anymore. I want expertise and high quality and I want to pay for the expertise."

There are no guarantees of consulting success, however. Carol Realini, president of J. Frank & Associates (Palo Alto, CA), helped a downsizing team at a large midwestern manufacturing concern execute a pilot project that exceeded all management expectations over 12 months. Final result: The downsizing team was laid off — management wasn't ready to downsize.

Advice And Consent

ONE CONSULTING FIRM described working with a Middle East oil company that desperately wanted a client-server system. "That's the latest technology, and we want one," the client said. The client, reports the consulting firm, lacked even a basic understanding of open systems and client-server systems. What they perceived was a hot new technology that they had to have, rather than an appropriate technology solution for a pressing business problem.

Phil Seufert, corporate migration services manager for Wesson, Taylor, Wells, says the first thing he does with a new client is to listen carefully to understand what the client in fact wants, which may not be what they ask for. "We define the fuzzy areas where we need to work together to determine what

they need or want. We have to determine if our understandings of client-server and distributed databases and remote procedure calls differ. We have to make some fine distinctions between buzzwords and reality in the marketplace right now."

Once terms are clearly defined, says Seufert, he can help the customer understand what technology is available in the marketplace and how best to apply those technologies to their infrastructure and organization. "Then," he says, "we can develop a plan for getting from where they are to where they want to be."

Seufert notes that one of the most common discussions he has with top management at client firms is a very basic one about open systems. He has to persuade them that open systems is not some imaginary issue, but that this transformation will in fact come to their firm in some form. He frequently finds himself tempted to tell hesitant MIS managers that if they don't move to open systems soon, then their replacement will have to do it. Success in moving clients to the most effective IS technologies sometimes depends as much on political and presentation skills as it does on having effective technologies.

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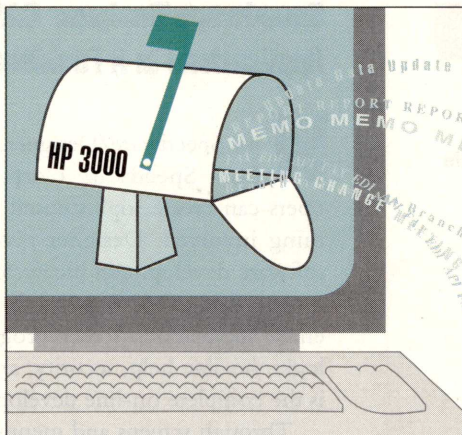
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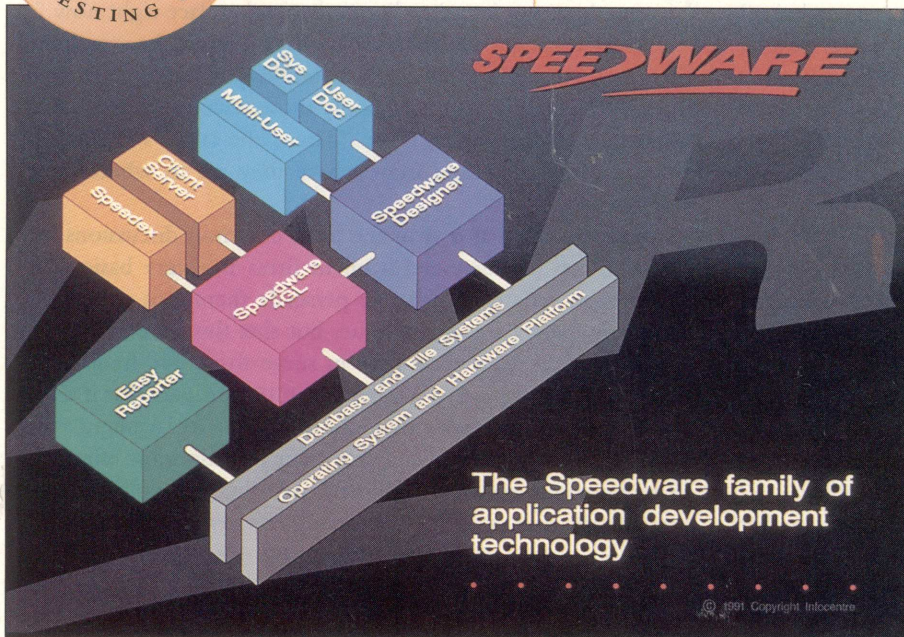
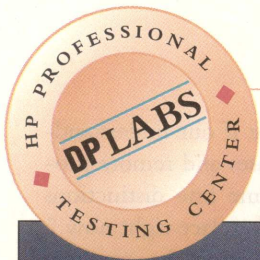
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Speedware/4GL is a fourth generation language capable of creating entire applications: screen programs, reports, batch updates, procedural logic, on-line help, security, and an integrated menu system. Designer is the complete on-line development environment for Speedware/4GL.

Through screens and menus, Designer can generate and manage all the Speedware/4GL code for entire applications, create (or re-create) the databases and files, and even produce end-user and system documentation. Designer really shines when the inevitable enhancements are necessary. All the information about the application is on-line.

Designer also is object-oriented. Objects managed by Designer include: items, databases, programs, users, system defaults, applications and documents. Objects and their attributes are held in a proprietary data structure, called a "repository" in CASE lingo — in Speedware-eze, it's called a "design." The proprietary data structure facilitates portability to other operating systems.

Designer is flexible. It doesn't impose a development methodology but lets the developer choose the best approach for each project.

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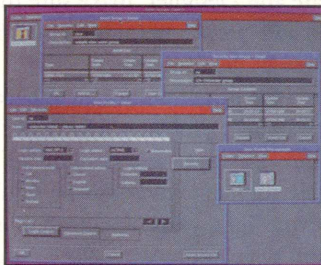
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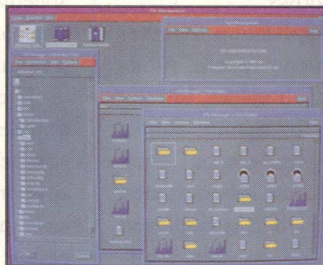
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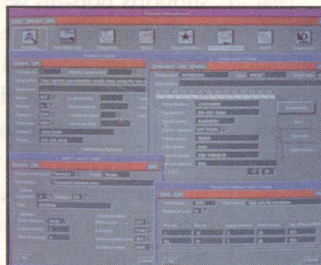
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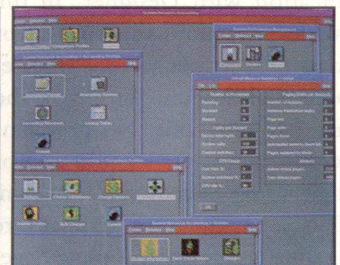
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Users can select from three basic approaches:

1. Define all data objects through Designer's data dictionary screens. Create the programs, letting Designer generate the necessary data structures.

2. Load the basic data definitions from existing structures such as TurboIMAGE. Fine tune the data objects (prompts, help text, display formats, etc.). This might be the technique of choice for developers with expertise in high-performance applications.

3. Define the program objects, letting Designer create the underlying data and file objects for you (and automatically change them if necessary). Note how this facilitates prototyping by focusing on the inputs and outputs of the application.

Trying It On

All tests were performed on a HP 3000 917LX running MPE XL 3.1 with Speedware/Designer v6.02.01.

The place to start with Designer, obviously enough, is the tutorial in the Getting Started manual. It guides you through the creation of an application using the third methodology listed above. It requires several hours to work through, but in the end, without ever leaving Designer, you have a working prototype of an order entry system. Try doing this using a 3GL in anything short of several days. Even with Speedware it could take more than a day. Clearly, Designer can improve productivity right from the start.

I also tried several examples employing the second design methodology. Starting with several existing databases, I loaded them into Designer and tried to re-create a meaningful segment of an application with Designer. In this "real world" situation, the built-in program logic of Designer was inadequate to duplicate all the functionality of the original 3GL programs. No problem. From within Designer, I could add program logic using Speedware/4GL commands. The possibilities for gradually re-engineering legacy systems using Speedware/Designer are endless. Again, it took me

only several hours to accomplish what would have required days with a 3GL.

All The Accouterments

The first thing I noticed was that Designer has an extensive on-line HELP facility. HELP is available at all levels and includes pick lists.

Designer-created screens are extremely easy to work with. I never have been a fan of block mode and VPLUS

Designer ties the application together with a sophisticated menu system. You can use default values, but the fun is in customizing the menus.

because of its relative inflexibility. I've also found character mode screen tools usually wanting in functionality. Not true with Designer. The screen editor in Designer is easy-to-use and intuitive. It produces screens that behave. Do you like to use TAB? Fine. The "arrow" keys? That's fine, too. RETURN? No problem. Function keys? Of course. Backward TAB surprisingly does not work, but the "arrow" keys plus RETURN gives the same result.

Unlike most character mode screen handlers, fields act like VPLUS fields: local edit keys can correct/modify the value; the RETURN key accepts the modified field. The screen handler also supports pop-up windows.

Designer ties the application together with a sophisticated menu system. As always, you can use default values, but the fun is in customizing the menus. Application security is a menu option. Each branch can have an access list associated with it that determines if it is displayed for a particular user. For example, a human resources/payroll application can be customized through the menus. The menu system is very flexible. You can

run any program, including another Speedware application, from a Designer-maintained menu. This makes it easy to merge the use of Speedware in existing applications.

In an interesting exercise, I ported an application developed on the HP 3000 with Designer directly to my PC, which was running the PC version of Speedware. I had to download only four files (all normally created by Designer), make a few minor changes, and run a few utilities on the PC. Voila! The same application was on a PC (with rodent support). It took me an hour or so, but only because I didn't know what I was doing.

Designer can restructure your TurboIMAGE databases when the design changes. This is both good and bad: It's good during prototyping; however, it's not good if you're working with legacy systems. The restructuring works fine but some dataset names were changed in one of my test applications. Better (and much faster on production databases) would be one of the available TurboIMAGE restructuring products.

Dressed To Code

Designer is for professionals. By taking defaults you can, with minimal experience and zero knowledge of Speedware/4GL, create meaningful applications. However, you will miss out on substantial functionality. Furthermore, if performance is important (and how often is it not important?), you need some experience in database design. So, don't hand your accounting manager the Designer manual and say "build yourself a general ledger system." If you're making the substantial investment necessary to acquire Speedware and Designer, make sure that everyone gets proper training. You will save money in the long run.

There is no magic pill for all application development problems. However, if you acquire Designer and commit to it as your development environment, you'll have moved light years ahead of those people still developing with 3GLs — or even most 4GLs. With Designer, you will build better applications faster. ■

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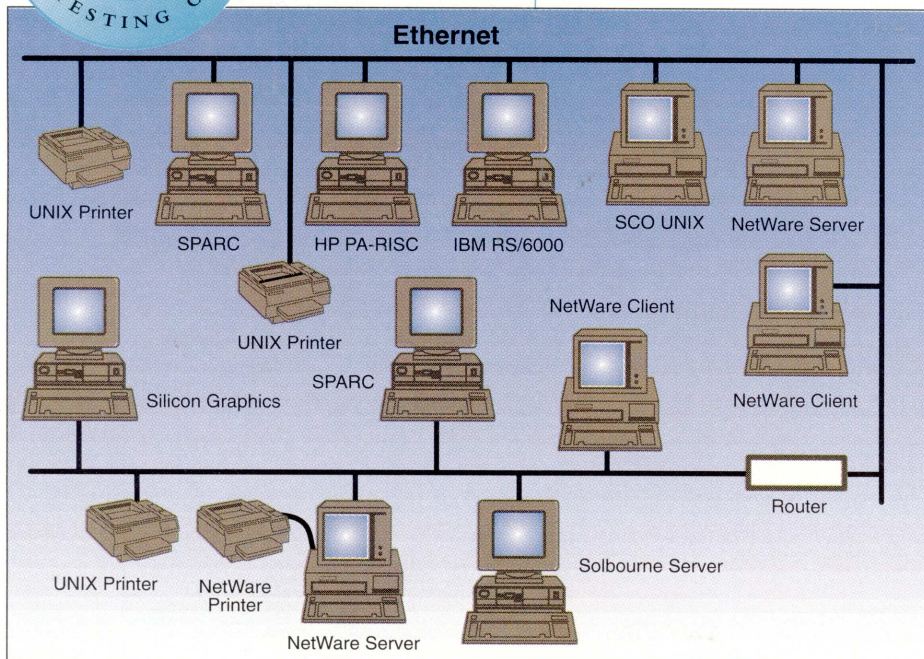
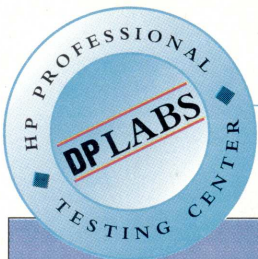
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Knitting A Net

SoftNet Utilities

OBSERVATIONS:

- Access from a NetWare client to Novell file systems residing on an HP-UX machine.
- NetWare-to-HP-UX printing, and vice versa.
- Remote logins to UNIX for NetWare users.

PLATFORM:

HP Apollo 700/800 Series.

PRICE:

Entry-level configuration consisting of 16 concurrent users and terminal sessions is \$1,295.

Puzzle Systems Corp.

16360 Monterey Rd.
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Morgan Hill, CA 95037
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Puzzle Systems Weaves UNIX And NetWare Into A Single Mesh With Its SoftNet Utilities

Ardent Star Trek fans often engage in a favorite pastime — the critique of Trek plots old and new. A favorite has been an episode from the original series called, “The Tholian Web.” In that installment, Kirk & Company encounter a shimmering lattice of electromagnetic force that threatens to immobilize the Enterprise. The apparent simplicity of this network of energy belies its power and effectiveness.

This also might be an ideal description of SoftNet, a new product from Puzzle Systems (Morgan Hill, CA). SoftNet Utilities is a collection of tools that allows the HP-UX workstation to act as a server to a NetWare client.

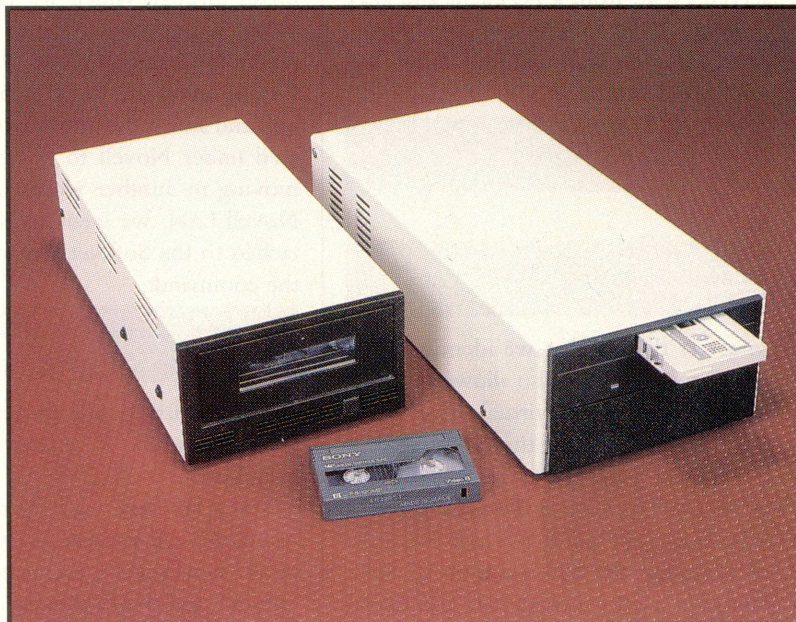
SoftNet permits such clients access to full NetWare file and print services, as well as entry to the UNIX host’s file system, without requiring TCP/IP at the NetWare/DOS end. That is, a NetWare user running IPX on his workstation can attach to and interact with the SoftNet server as if it were a purely Novell-driven machine.

Print jobs from a NetWare print queue can be redirected to the HP-UX spooler, and UNIX print jobs can be sent to the NetWare queue. Additionally, PC users running IPX can carry out a remote login to the HP-UX workstation that acts as the SoftNet server.

Establishing this UNIX/NetWare warp and woof calls for several threads including, an existing Novell NetWare file server; an HP PA-RISC workstation; HP-UX V.4 or higher; and at least 12 MB of

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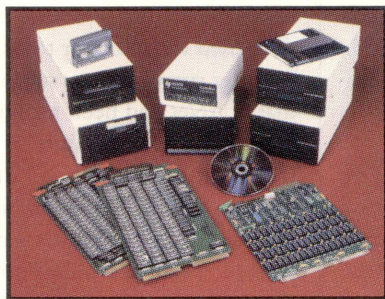
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physical RAM (more if you intend to allow SoftNet to serve many concurrent users).

The HP Apollo 9000 Model 710, on which we tested SoftNet, is a long-standing member of our in-house Ethernet, which is also the carrier for our small Novell LAN. This came to our advantage when loading and configuring SoftNet. Completing that installation required that we log into our 710 as root; open a terminal window and from it **mkdir** to create a SoftNet directory; and **tar** the files contained on the distribution tape. We also needed to make the SoftNet directory known to our environment with export, and configure SoftNet by means of several dialogue boxes. These dialogue boxes are provided in the package and they request information such as our SoftNet server's network name, network interface type, packet frame type, and so on.

A Stitch In Time

We began our work with SoftNet from the UNIX side of the tapestry, editing `/etc/passwd` to create a SoftNet user who could access Puzzle System's utilities, but not HP-UX. During configuration, SoftNet changes `/etc/passwd`, but not in so tailored a fashion. It merely makes UNIX aware of those Novell users, such as the Novell-ubiquitous "supervisor," who may access the hybrid server. In `/etc/passwd`, we made the following entry for a "limited" user.

```
smith:*.25:50:./:/bin/csh.
```

The use of an asterisk in the password field, combined with appropriate editing of `/etc/group`, designated a NetWare user who could log in to the SoftNet utilities, but who could not perform a remote UNIX log-in to our HP Apollo. Before continuing, we ran the install procedure **sninstall** in order to use its diagnostics arm to check our handiwork before operating SoftNet.

From the xterm window we used to edit the password and group files, we carried out the command **snfs** to bring up

the SoftNet Utilities non-dedicated server. Next, from a PC client and after running IPX and Net-x, we logged in as supervisor to our original NetWare server, and executed:

```
attach lab710/supervisor
```

and

```
map s:=lab710/sys:\
```

to access the HP that we identified as a SoftNet server. This also allowed its hard disk to be seen as a virtual drive under Novell. After running the NetWare utility "syscon", we were able not only to verify the existence of those UNIX users who were selected as SoftNet/NetWare users during the configuration of SoftNet, but also to create an additional NetWare user who corresponded to the "smith" we placed in `/etc/passwd` and `/etc/group` earlier.

Before logging out as supervisor, we used file and print services under SoftNet. The former was simple; because we had already mapped our workstation's hard drive for NetWare use as "drive s", we had only to issue the DOS/NetWare command "s:" to gain access to the HP-UX filesystem. Once there, we accessed several of the files it contained — not UNIX files, but files we had placed into the Novell-like system of directories, including ones called SYS and PUBLIC, which SoftNet created during installation. After completing this test, we were convinced of the functionality of the file-services arm of SoftNet.

When we began our intertwining of HP-UX and NetWare by means of SoftNet, we had no print server configured for our pre-existing Novell network. For this reason, we were particularly interested in working with that part of the SoftNet Utilities that allows a UNIX station to act as such a server to NetWare. This work began by using the NetWare utility "pconsole" to create the logical print server "fuzzbucket," and to associate a print queue with that server. Then, executing the SoftNet command **snprinter** on our

HP brought us to a series of dialogue boxes through which we were able to: create a password for our fresh print server; log in to ourselves (that is, to the Novell server our 710 was pretending to be); and attach the print server we'd created under Novell to ourselves. Then, moving to another workstation on our Novell LAN, we went to NetWare, attached to the SoftNet server, and issued the command:

```
nprint c:\autoexec.bat /f=labant /
q=printq_0
```

thereby causing our current station's autoexec.bat file to appear in the 710's print queue.

For a final test, we logged out of one of our Novell stations (we were logged in as "supervisor"), reconnected as user "smith", and tried a remote login to HP-UX on our 710, rather than to SoftNet there. As expected, this attempt failed, because of the way we'd set up this user's activities early on. But a re-try of **unxlogin**, the SoftNet utility that handles this function, under the Novell login "supervisor," worked just fine.

Our lab work with SoftNet concluded with downing the SoftNet Utilities fileserver. From our xterm window, we entered:

```
ps -aux|grep "snfs"
```

to obtain SoftNet's process ID (PID), and then used that number to "kill" SoftNet. Another run of process status (**ps**) showed that SoftNet had been terminated.

Fileserver availability is an integral thread in the pattern of any network; readily obtainable print and remote login capabilities are also basic strands in that pattern. SoftNet Utilities can strengthen the fabric of a mixed DOS/NetWare/HP-UX environment by adding Novell file and print services on the HP-UX machine, and by knitting into the overall design remote logins to that latter operating system. In short, SoftNet Utilities can easily create a web of services that will entice users with its flexibility and strength. ■

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EUROPEAN WATCH

Marsha W. Johnston

made news in the trade press when Bill Pugsley, an HP independent software vendor (ISV), publicly grilled HP U.K. executive Bill Russell about continued and egregious regional inequities in HP's pricing policy.

It also marked the second year in a row that Pugsley, managing director for Perwill Systems (Alton, NH), has posed the same question to Russell. "This year, Russell reassured me that [a global pricing policy] would arrive in November of '92. He said, 'I hope I'm here next year and that I don't have to answer the same question again.' And I said, 'I hope I don't have to ask it again.'"

Pugsley may not have to ask his question again next year, at least not in precisely the same manner.

One World, One Price?

On November 1, Hewlett-Packard introduced its "global pricing initiative." The initiative, which theoretically covers all HP products, is aimed "definitely at eliminating [the] global pricing issues our customers have raised," says Rudi Schmickl, HP European marketing manager for multiuser products, in Boeblingen, Germany.

The change involved a recentralization of pricing decisions that previously were determined by individual countries. It also involved a recasting of the pricing structure to make the services and the value that HP adds to the product price transparent to the customer.

"We realized that the somewhat complex process of determining price in each country was too long, so instead of having prices set in each country, they will

The annual HP U.K. Computer Users Association meeting

be made either globally or on a European basis," says Mike Sell, HP sales and marketing administration manager for Europe, in Geneva.

As a result, each of Europe's marketing centers, such as the one for the systems organization in Germany and the one for peripherals in the U.K., will set the prices for their own product lines, adds Schmickl.

Each of Europe's
marketing centers will
set the prices for
their own product lines.

"Fundamentally, our traditional cost-plus method of pricing was not sufficient and we needed to go more to a market-driven price," says Sell. "Now, we will set the market price according to the competitive environment we're in, accounting for the cost structure, profit margin and the volume of sales needed to cover the cost."

"It's always a question of what is competitive pricing in specific countries. We're always watching IBM and DEC to try and price according to what they're doing," Schmickl adds.

At What Price Europe?

Pugsley's main bone of contention with HP, however, is that it has not reduced the price of products that it manufactures in Europe to a level equitable with their price in the United States, whereas IBM and DEC have. "IBM and DEC appear to

have recognized this issue, and where they manufacture, the prices are comparable, if not lower. We even have the situation where some DEC kits are cheaper in Europe than in the United States," Pugsley says.

Neither Sell nor Schmickl would acknowledge that the new initiative means the same would be true of HP products manufactured in Europe. "The cost structure is more complex than just taking advantage of your local manufacturing," says Sell, "I don't know of any products manufactured 100 percent in the country of supply."

"There are definitely manufacturing and marketing reasons that explain the differences in pricing in Europe. The United States is one large market, whereas Europe is still fragmented and there are areas, such as Spain, where we need to invest in infrastructure," says Schmickl.

Roger Lawson, managing director for Proactive Systems Ltd. (Orpington, U.K.), agrees with Schmickl's analysis. "The market in Europe will generally stand higher prices; unfortunately it's true for hamburgers as well as computers. You need different keyboards, different software versions, and a separate sales staff. A New York salesman can go to Dallas, but you can't have a U.K. salesman go to France"

Consequently, say both Schmickl and Sell, European prices should fluctuate only 15 to 20 percent between countries. A 20 percent margin is still a big one, says Lawson, but he adds that it reflects the extra costs of doing business in Europe. "If they stay within 20 percent, it will be a lot fairer than in the past. They have been horribly out of line," claims Lawson.

"One of the goals we had was to take

out the gray market opportunities that were being made because of disparate pricing," says Sell. "We realized it was making problems for customers and [it caused] missed opportunities for us."

Lawson believes the new initiative may achieve the goal. "At 20 percent, it's not really worth people's time to buy in the States. If you're a big enough international company, you will, but a lot of companies don't know how to [buy overseas]; they worry about power requirement differences, etc., and others would be more concerned about keeping good relations with HP. It's not particularly discriminatory; I would be satisfied," says Lawson.

Satisfied, Pugsley is not. "If prices were identical internationally, the differential could be four to five percent, but 20 percent of a \$300,000 kit is \$45,000, and I can ship from the U.S. for \$15,000. Fifteen percent doesn't strike me as being an equitable price differential. If they had said five to 10 percent, I could have

swallowed my tongue, but I will continue to pursue the issue."

Service Charges

Rather than promising one price for a product worldwide, HP seems to be stressing a transparency in pricing the services it includes with the product, which gives the customer a choice.

Sell explains that the global pricing initiative is defined by a three-tier structure, which sets prices according to the services the customer desires.

At the top of the structure, he says, a company such as AT&T, which has an infrastructure adequate to handle importation and customs, can buy directly for the U.S. factory. There, he says, it is likely to get the lowest price because HP has stripped out its cost for that service.

Then, he says, comes a level of pricing that might be called "regional," where, for example, a company picks up the delivery from customs and handles the distribution thereafter.

The third level of pricing is for the customer who buys locally, says Sell, "who wants us to do everything from transportation to installation."

"Our goal is fair pricing. We want the customer to receive value for the money. If you buy peripherals in the U.S., you don't get our services of importation, customs handling etc.," says Sell.

According to Sell, "The cost savings will depend on the customer. AT&T, for instance, has the infrastructure to shipping and customs." He denies that the policy means that small companies are going to be penalized with the highest prices. "The customer has a choice and the choice will depend on how he operates internally," he says.

"I think we will find [pricing] differences will erode until they have disappeared completely, and I'm sure VARs will find the opportunities for arbitrage and gray marketing will disappear, whether for HP or for any other vendor."

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HP APOLLO

Fred Mallett

summer, I stood in the hotel lobby, watching the incoming winds from Hurricane Andrew bend the trees outside. I wasn't going anywhere. Behind me in the hotel, everyone was ranting about how to make the transition from Domain/OS networks to HP-UX. But none of them were going anywhere, either.

Wandering around the show's vendor arcade and HP's technical lab, I spoke with many people and discovered some information that not only makes the transition to HP-UX possible, but relatively easy, too. So now, let me outline my plan for preparing to leave Domain/OS without going anywhere. By the way, I'm assuming that *any* migration you might make would be to a UNIX-based platform, rather than Windows NT (the latest imitation UNIX operating system).

Domain: The Safety Net

Preparation for your move to HP-UX can begin long before you buy your first new machines: Start using your Domain network like a UNIX network now. Perform all tasks that you can in a UNIX-like way. When you hit a wall while doing a task, revert to the Domain commands. For application users, this means making the effort to learn UNIX commands and shells. But by working this way, you can learn UNIX without the frustration of finding yourself dead in the water.

Unfortunately, HP-UX does not easily map into the user environments supplied with Domain/OS. As with most vendors, HP tried to give you the best

At the Inter-Works conference in New Orleans this

of SYSV and BSD commands, and thus you have pieces from both. I recommend using the Sys5.3 environment on Domain/OS, with **/usr/ucb** added to your command search path. This is as close as you can get to what HP-UX offers without some serious customization.

Take UNIX To Task

For system administrators, there's more to learn than just the UNIX commands and shells. Most administrative tasks are different. You can start training yourself in the new manner while there are still commands like **mtvol** to fall back on.

Here's a list from which you can build. Use **mount** and **umount** instead of **mtvol**. Use **tar**, **dd** and **cpio** instead of **wbak** for writing to tape or disk files. Get used to compressing files and trees before you copy them around the network. Use **rcp/remsh** (i.e., **rcp** or **remsh**) or **tar pipes** to copy files around the network (see "The Numbers Advantage," October 1992).

While the Domain DDS file system is fairly efficient, NFS is not. I strongly recommend against using commands such as this:

```
cp -Rp /user/disk_hog /net/another_host/
user
```

You will get much better performance by doing the same with **rcp**, **ftp**, or **remsh pipe**. Get in the habit of using **remsh** or **rsh** for issuing one command on another host instead of using **rlogin**, **telnet** or **crp**. If you use BSD, **rsh** is the equivalent command. For example, you could check disk space on another host as well as that host's operating system revision:

```
remsh another_host_name 'uname -a ;
bdf -t hfs'
```

Putting this in a **for** loop would allow

checking of a list of nodes at once. This list could come from a file. Better yet, use **grep** to match the Internet address of the specific network or subnetwork you want to check, such as this:

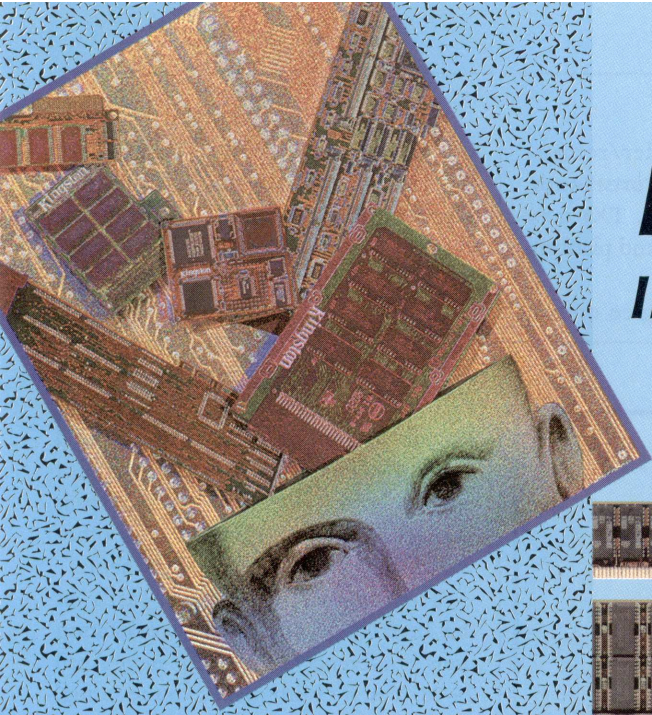
```
#!/bin/sh
for host in `grep 156.156.3 /etc/hosts |
awk '{print $2}'`
do
echo $host : remsh $host 'bdf -t hfs'
done
```

Of course, you will most likely use NFS and NIS when you go to an HP-UX network, so you would modify the code above to use the **ypcat** command for the host's database.

System administrators must also learn the shell scripting capabilities of the Bourne shell or the Korn shell. Keep in mind that most system-supplied scripts in HP-UX are System V Bourne shell scripts. You must be able to read and modify them. This means rewriting all existing scripts you use on Domain/OS into System V Bourne scripts if you plan to migrate them.

If you start changing scripts now, use the shell declaration **#!/sys5.3/bin/sh** to execute them in a System V Bourne shell — it's very different from the BSD Bourne shell. You'll find functions and parameter substitution widely used in HP-UX supplied scripts. Here's an example of parameter substitution:

```
[169]$ echo $DIR #Prove that DIR is unset
[170]$ echo ${DIR:-/etc} #Substitute /etc
if DIR is unset
/etc
[171]$ DIR=/usr/etc #Set DIR to a value
[172]$ echo ${DIR:-/etc} #Show that DIR
is used if set
/usr/etc
[173]$
```

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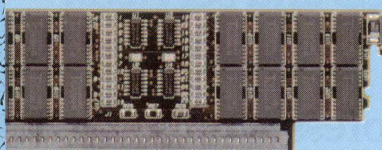
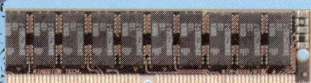
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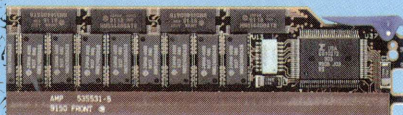
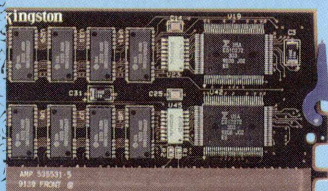
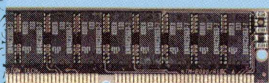
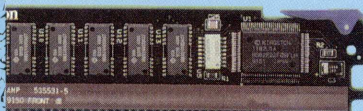
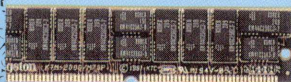
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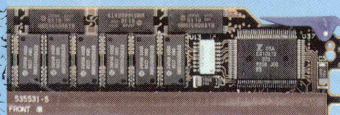
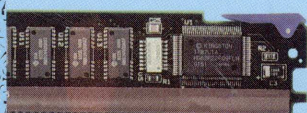
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Plan Ahead

Once you are ready to start the transition, you'll find there is plenty of assistance available. HP offers a variety of help, and there are several consultants who perform much the same function.

Companies such as reseller/remanufacturer Tryonics, Inc. (Portsmouth, NH) and PARANET (Dallas, TX) now offer a variety of consulting and platform integration services.

All of these companies agree on one

thing: plan, plan, plan. Don't forget to plan for applications and the new support users will require if the versions you will be running are different. Most transitions will also require license changes.

One source of help you don't want to overlook is your peers. Many other networks already have been converted, and many administrators have learned valuable lessons. Probably the best method of learning from your peers is through immersion therapy — in other words, spend a lot of time with them.

This can be done most easily at the InterWorks HP Apollo workstation users conference coming up next April 25-28. Yes, it's been moved to the spring, and unlike the last two years, it won't be held jointly with the INTEREX HP users conference. This time you'll have your workstation colleagues all to yourself.

The conference will feature a track of user presentations geared toward transitioning networks to HP-UX, along with many Domain/OS and HP-UX presentations. Remember that users make a user conference what it is, so if you've ever done anything on a node, why not give a presentation about it?

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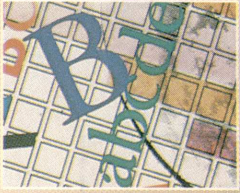
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Are you frustrated when a software program reports

that you don't have enough memory to run it—even though your system is packed with 8 MB of memory and the program says it only requires 512K of RAM to run? If this happens to you often, you're probably running out of conventional memory and need to manage your memory more effectively. DOS memory management isn't difficult, and with little effort, you should be able to make use of all the memory capacity you've bought.

The only tools you need to manage your memory are standard DOS 5.0 files: MEM.EXE, which allows you to examine the organization of your memory space; and HIMEM.SYS, the DOS device driver for the high memory area (HMA).

MEM.EXE is a utility program that shows you the status of memory buffers, programs and device drivers currently in memory. By itself, MEM simply reports the amount of conventional and extended memory available. By using additional command line parameters, however, you can view various levels of detail about programs loaded in memory, including how much of each type of memory a program or driver is using.

The MEM command line parameter that returns the most conveniently formatted information is /c, which shows you a list of programs in memory and the amount of memory each program uses. The /p option returns a more complete list of programs, system data areas and device drivers and their size and location in memory. The final MEM option is /d for debug, which provides the same information as /p, but with system and de-

vice drivers included. I suggest you stick with the /c option.

HIMEM.SYS is the standard high memory area (HMA) device driver that provides a 80286 or 80386 system with 64K of extended memory just above the 1 MB address range. Other products are available to define this high memory area, but we'll stick with standard MS-DOS options here.

Advice And Precautions

You may want to try several of the suggestions I make here, so I encourage you to make a backup of your existing CONFIG.SYS and AUTOEXEC.BAT files. That way, you won't lose your present defaults. And, because bad configuration files can render your system unable to boot, you also should have a bootable floppy disk handy in case something goes wrong. You can create such a disk with the command `FORMAT A:/s` from the DOS command prompt.

Once you have a way to recover if something goes wrong, you're ready to start. As a "minimum" configuration, I suggest something similar to the CONFIG file shown here:

```
DEVICE=C:\WIN31\HIMEM.SYS
FILES=10
```

Depending on your system, you may need to specify information about how your hardware handles the A20 address line. For example, on a Classic Vectra, you need to append `/machine:4` at the end of the HIMEM.SYS line.

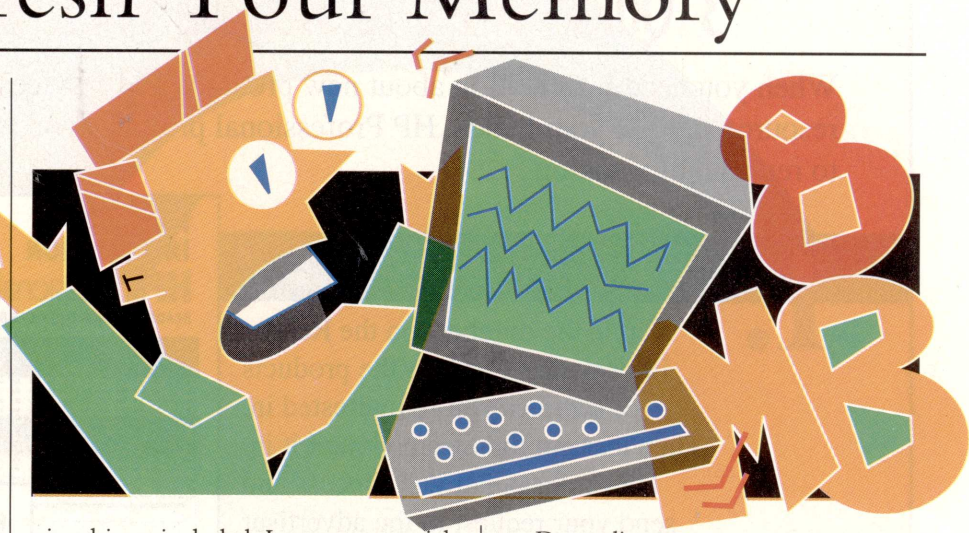
You might find more than one copy of HIMEM.SYS on your hard drive. It turns out that MS-DOS ships HIMEM.SYS with MS-DOS and Windows 3.X, and may ship newer versions on other products. Which one should you use? Check the time and date of creation on each HIMEM.SYS you find, and examine the contents using DEBUG. Microsoft is always updating system software, and generally speaking, the newest version should be the best.

Move DOS Into High Memory

The DOS command in CONFIG.SYS lets you specify whether MS-DOS should be loaded in the high memory area managed by HIMEM.SYS. On the line after HIMEM.SYS, add the line:

```
DOS=HIGH
```

When your system reboots, look at the output from MEM. You should see that your largest executable program size



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has grown, and your available XMS area has become smaller. Pipe MEM/c through the MORE command (MEM/c | MORE), and you'll see that much of the system is now in XMS rather than in your conventional 640K area. This looks like a good trend!

If you want to use the free areas of memory in the address range above 640K but below the 1 MB line, you need to allow DOS to use this upper memory. Do so by changing the DOS line in CONFIG.SYS to:

```
DOS=HIGH,UMB
```

Notice that this doesn't allocate or use space; it simply tells DOS that you'll eventually be using upper memory blocks (UMBs). You also can use the UMB option without loading DOS high, although you normally would use both.

Once you have allocated UMBs in your CONFIG.SYS, you can use this extra memory to load device drivers and programs using the LOADHIGH statement. This statement in your CONFIG.SYS, or the LOADHIGH directive in AUTOEXEC.BAT, lets you specify that the device driver should be placed into an UMB if space is available. If there isn't enough UMB available, DOS will load it into conventional memory. To load the ANSI and mouse drivers into UMBs, your CONFIG.SYS might include:

```
DEVICE=C:\WIN31\HIMEM.SYS
FILES=10
DEVICEHIGH=C:\DOS\ANSI.SYS
DEVICEHIGH=C:\WIN31\MOUSE.SYS /S1
DEVICEHIGH SIZE=fe0 C:\MBK\DDR1.SYS
```

Notice the SIZE parameter in the above example. DOS usually can recognize how much memory a particular device driver needs, but sometimes a driver will request extra memory after it has loaded. If your system hangs up with some drivers in UMBs, you might check to see if it requires additional memory allocation. The statement above tells DOS to allocate fe0 (hex) bytes for DDR1.SYS regardless of how much memory it appears to require.

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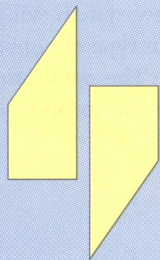
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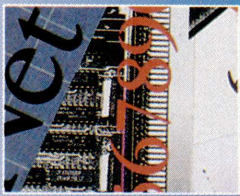
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NETWORKING

Tim Cahoon

the HP 3000, and third-party vendor Innovus introduced a similar product for the HP 9000 and HP-UX. When Portable NetWare for MPE, now known as NetWare/iX, was first announced, many people likened it to HP's old Resource Sharing product. Resource Sharing was a good first step toward implementing a network file server on a commercial minicomputer platform, but its speed was about the same as that of a floppy drive. (Unfortunately, similar claims of poor performance dogged the Innovus NetWare product for HP-UX.)

New NetWare/iX, however, is a different story. With recent enhancements, it now compares favorably with even the fastest of traditional PC file servers. When supporting more than 40 users, a low-end HP 3000 917LX running NetWare/iX can outperform a 25-MHz 486 Native NetWare server on *PC Magazine's* LAN benchmark tests. (When the systems are used to support fewer than 40 users, their performance is roughly equal.)

Of course, Portable NetWare, even in the form of NetWare/iX, does have its limitations. Its primary purpose is to provide basic file server functions to facilitate PC integration. To implement applications other than print and file sharing, you need Native NetWare. Fortunately, HP has announced plans to port NetWare to the PA-RISC architecture in native form.

Recently, I spoke with Ray Mausling, NetWare program manager for HP's new NetWare Operation. He offered insights on the specifics of the new PA-

A few years ago, HP introduced Portable NetWare for

HP's goal
is to provide
the customer with
a completely
configured plug
'n' play Native
NetWare server.

RISC hardware and its potential impact on the current product line. He also had some foresight as to how this new hot box will be used.

According to Mausling, the performance of the PA-RISC box starts out at the high-end of the Intel product line, in which he includes the new Intel P5 chip. The power of PA-RISC, however, goes way beyond the capabilities of any Intel processor. The new PA-RISC NetWare server will run Native NetWare and feature an EISA bus just like that of PC file servers. You'll be able to move the cards from your current EISA NetWare server over to the PA-RISC box and run — simple as that.

PA-RISC Goes Native

HP's goal is to be able to provide the customer with a completely configured plug 'n' play Native NetWare server, says Mausling, so that all you'll have to do is unbox it and plug it in.

Also, because the new server will be based on PA-RISC, HP should be able to offer the same expandability and scalability for Native NetWare that it cur-

rently provides for HP-UX and MPE/iX. Multiprocessing NetWare servers, while possible, probably won't be needed for a while thanks to the tremendous power of HP's single processor systems. Mausling predicts that in the future, we may even see this new machine bundled into the MPE and HP-UX product lines.

In regard to functionality, Mausling says, Native NetWare on PA-RISC will deliver all of the features currently available on Intel-based NetWare servers, plus vastly improved power and performance. Currently, the average user load on a NetWare server is 10 to 20 clients. PA-RISC servers will start out supporting 30 to 40 clients and range upward to hundreds of clients.

Power Serves A Purpose

These new PA-RISC machines are aimed at the Tricord and Netframe super server offerings, and customers will use them in two basic ways: for server consolidation and as I/O-intensive application servers.

Server consolidation allows customers with 50 to 100 Intel servers to combine them on a smaller number of PA-RISC machines and end up with, say, 10 to 20 servers. Consolidation provides you with greater control over your network and makes it easier to manage your physical system resources (i.e., power, tapes, storage, etc.). The high performance of PA-RISC lets you have servers with hundreds of users, or servers with both database applications and users, or a single server with many database applications on it. According to Mausling, initial sales of the new system will be to customers doing this type of consolidation.

The application server function will be the second thrust of HP's marketing

campaign for the new servers. The sheer power and high-availability of PA-RISC will allow customers to develop mission-critical applications for NetWare environments. The proven quality and reliability of PA-RISC servers should go a long way to convince customers that enterprise-class NetWare applications are a viable development option.

Mausling says that projects to port traditional MIS technologies such as backups, disk storage and printing are in the works. And, HP believes Native NetWare will open up a new commercial server market and extend NetWare into areas that it could not reach without more powerful hardware.

The newly formed NetWare Operation — part of an agreement between HP and Novell to jointly develop new products — already has released plans to create a new set of application development tools for the NetWare environment.

Based on the strong tool sets found in UNIX systems, developers will be able to bring applications to market faster. Other HP/Novell projects relate to HP LaserJet printers, E-mail and network management. The new relationship also extends to support, sales, training and distribution channels.

Addendum

In a previous column regarding terminal emulators for the HP 3000, I mentioned that Minisoft has a version of Minisoft '92 that runs on Sun workstations. What I didn't make clear was that this particular version supports only Telnet and not NSX3000. Therefore, in order to use the Sun workstation as a front end, you must have an HP host with ARPA services, a DTC with ARPA services, or a terminal server with ARPA services that you can Telnet into, and then go out a serial port to an HP 3000.

NetWare for PA-RISC should prove to be the perfect complement to HP's existing product lines. You now have MPE and HP-UX for traditional computing and Portable NetWare for PC integration. In the near future, Native NetWare will add new levels of performance and functionality to support PC-based client-server LANs. And even after Native NetWare hits the streets, NetWare/iX and Portable NetWare for the HP 9000 will continue to provide links between NetWare LANs and your multiuser systems and servers.

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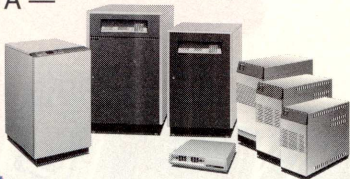
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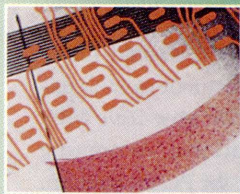
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OBJECTIVELY SPEAKING

Richard Riehle

The choice of programming language for a large, real-time system is not as critical as the quality of the design. Programmers could do the job in C++, Eiffel or any other language that supports large-scale project development. But language choice will influence the quality of design implementation.

Some languages simply "scale up" better than others. BASIC, for instance, does not scale up well. Traditional C does not scale up well and even ANSI-74 Standard COBOL is too small. All these languages have been used to build very large systems, yet none of them include adequate support for contemporary software engineering principles.

Take a set of children's wooden blocks, and stack them on top of each other. How many can you stack before the block tower becomes unstable? The interface for each block is nicely generalized, and there is not much thought required to put one on top of another. This is something akin to the one-size-fits-all notion. But there is a practical limit to how high we can make the tower with this kind of component. To make a larger tower, we could add some tongue-and-groove or dowel-and-hole methods. We could even enclose the entire design in some kind of reinforcement wrapper. As our tower grows, we must use methods and tools that scale up.

The children's blocks are analogous to software blocks constructed in assembler and C. In fact, the original C language, often called a high-level language, is actually nothing but a universal assembler. It is definitely a one-size-fits-all language and, as such, is dangerous when used for systems in which reliability is important.

As software systems become larger and

more complex, the blocks from which they are composed must scale up to that complexity. They must fit together correctly. Software engineering is one of the few disciplines in which we are allowed to create large-scale, complex products that can be potentially dangerous by using the same techniques and tools we use to create smaller, more trivial systems.

Thinking Big

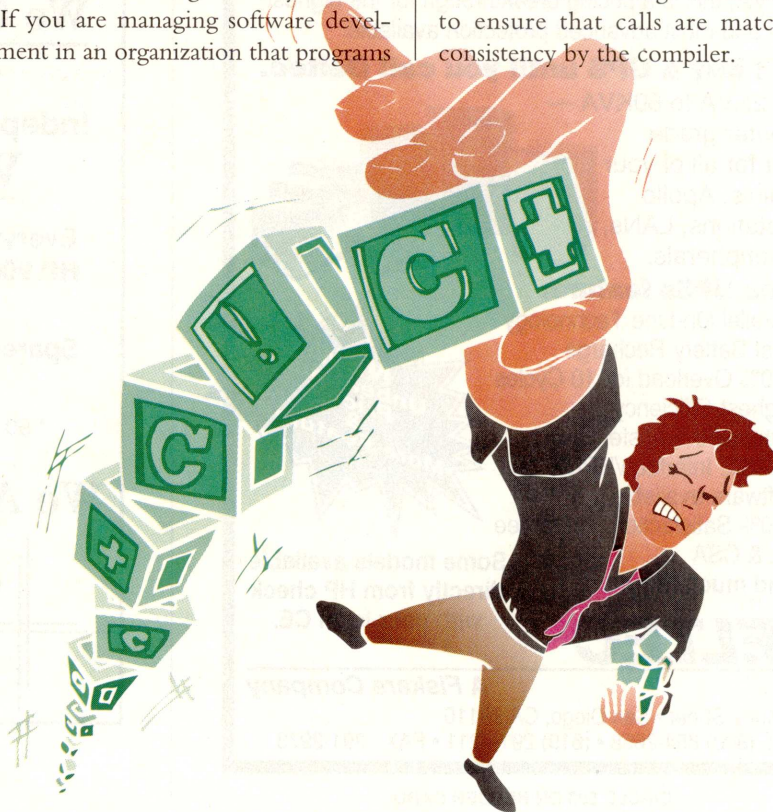
The designers of C++ saw the need for greater discipline in the design process for large systems and thus introduced function prototypes as part of the language. Later, the ANSI C Standard adopted the prototyping feature of C++. A similar capability exists in Ada and other contemporary software engineering languages. It is one of the features in C and C++ that can help you create more reliable software for large-scale systems.

If you are managing software development in an organization that programs

exclusively in C, or if you are designing serious software applications that will be programmed in C or C++, you should demand the use of function prototypes. If you can, try to incorporate strong typing (via typedef and C++ classes) in those prototypes. However, even the use of standard types in prototypes is better than no prototyping at all.

Keep in mind that programmers will be happier to avoid prototyping because they can much more easily continue with the one-size-fits-all habit.

Prototypes will not be a cure-all. Sometimes one program will span multiple source files, and that can reduce the usefulness of function prototyping. To solve this problem, the software designer can create a header file in which every external function has a prototype declaration. As a consequence, the programmer can take advantage of the header file to ensure that calls are matched for consistency by the compiler.



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What does a function prototype look like? Consider the following traditional C code:

```
int f (x, y) int x, y : { ...some code in ... }  
or  
int f (x, y) int x; int y : { ... some code here ... }
```

Here is the same code in a prototype form:

```
int f (int x, int y) { ... some code here ... }
```

The difference is subtle but important. At compile time, the ANSI C or C++ compiler can issue an error message if the call to function **f** has the wrong number or wrong type of arguments. Moreover, if you include a prototype in the header file in the form:

```
int f (int x, int y);
```

the implementation of that function will require exactly the same parameter list. In C, this is somewhat similar to, but not as effective as, building a Definition Module in Modula-2 or a package specification in Ada. It is a very powerful technique when used to create new classes in C++.

Prototyping Protocol

There are some new rules to learn. What constitutes a compatible prototype? When is a prototype actually visible? How do we design the application system so everyone on the project can take advantage of the prototyping conventions? There are also some problems when the designer mixes prototyped functions with non-prototyped functions, but a good designer will not permit this to occur anywhere in the design.

Function prototyping is only one of many techniques that can help the designer manage the complexity of larger

software applications. Unfortunately, it is all-too-often overlooked. Function prototyping is too easy to use for the serious designer to ignore it. Unlike learning how to design C++ classes, Ada packages or "overloaded" functions, the programmer using function prototyping requires a minimal adjustment to implement the code. And there is no extensive training required to get an experienced programmer up to speed on the concept.

The biggest adjustment will be for the designer. He must insist on consistent application of prototyping throughout the entire application. No exceptions. This problem, like many others in software engineering, boils down to human relations, not technical concerns.

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Formation for the HP 3000 is a complete electronic forms solution that lets MPE V and MPE XL users replace pre-printed continuous forms with electronically generated overlays printed on plain paper using laser printers. **Call (800) 767-0611 for free demo or circle 139.**

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Windows application that allows you to connect PCs to HP 3000s and HP 9000s. Supports Windows/286, Windows/386 and Windows 3.0. **Call (800) 767-0611 or circle 140.**

VITAL SOFT INC.

VISIMAGE the end user report writer for the HP 3000 market. StarJet, the electronic forms solution for your HP LaserJet. VISIMAGE and StarJet can be sold independently. **Call (800) 7VITALSOFT for a free demo or circle 143.**

WALKER RICHER & QUINN INC.

Makers of Reflection Series Software. HP terminal emulation for PCs and Macintoshes. **Call (800) 872-2829 or circle 145.**

HP Professional

Information Builders Offers FOCUS Interface To Oracle

Information Builders announced a FOCUS interface to the Oracle RDBMS running under MPE/iX on HP 3000/900 business systems and servers.

The FOCUS interface to Oracle provides full read/write access to Oracle files without converting or re-entering data. FOCUS tools feature an application development environment that uses a single language for data definition and decision support. The interface provides transparent database access while functioning as a fully integrated module for manipulating and modifying Oracle databases.

The FOCUS interface to Oracle RDBMS on the HP 3000/900 ranges in price from

\$740 to \$29,400, depending on configuration. Contact Information Builders Inc., 1250 Broadway, New York, NY 10001; (212) 736-4433.

Circle 400 on reader card

Contemporary Cybernetics Offers Data Encryption

Contemporary Cybernetics Group announced the CY-2000-S, a 1 GB optical disk drive with data encryption. Also announced was the availability of data encryption on the CY-8200 and CY-8500 8mm tape backup subsystems.

The CY-2000-S drive uses encoded card keys to control access to sensitive data. You still can read and write standard 650 MB and

1 GB disks, and high-level card holders still can write non-encrypted disks for easy data exchange. The CY-2000-S is a turnkey data storage subsystem that is compatible with all SCSI-based computer systems. The CY-2000-S provides gigabyte capacity, transfer rates of 1.5 MB per second and an 35 ms average seek time. The CY-2000-S provides a storage solution for users of applications like CAD/CAM, medical imaging and mission-critical DBMS.

With optional data encryption available for the CY-8200 and CY-8500 tape subsystems, uniquely coded card keys govern backup and restore operations. The CY-8200 and CY-8500 8mm tape subsystems can store between 2.5 GB and 25 GB.

HP Introduces Network-Ready PCs And Low-Priced Servers



The HP Vectra 486N Series PC and the HP Vectra 486/33ST Server.

HP announced four network-ready PCs and a series of servers designed to offer a network solution for organizations migrating from host-based systems to client-server networks.

The HP Vectra 486N PC series models come standard with a variety of upgradable processors, from 25-MHz Intel486 SX systems to 66-MHz Intel486 DX2 systems, and features such as 4 MB of memory

upgradable to 48 MB (on the system board), HP Ultra VGA+ graphics, and immediate plug-and-play pre-installed EtherTwist or Token Ring network interface cards.

HP Vectra 486N PCs are available preconfigured with an HP EtherTwist interface card, featuring a 16-KB input/output buffer, or with an HP Token Ring ISA 16/4 interface card. A boot read-only

memory (ROM) enables the PC to boot up from a network server running Novell NetWare, Microsoft LAN Manager, OS/2 IBM LAN Server, Banyan Vines and SCO UNIX. The video subsystem features an integrated 32-bit local bus video implementation with S3 graphic accelerator.

Security features allow the system to be configured so that a user password is required

Contact Contemporary Cybernetics Group,
11846 Rock Landing, Newport News, VA
23606; (804) 873-9000.

Circle 399 on reader card

Archive 3.0 Offers Document Management

Johnson Computer Software Team (JCST) announced Archive 3.0, a document management application based on HP's NewWave 4.0 GUI and designed for use with HP 9000 and HP 3000 systems. The program uses the object-oriented features of NewWave for "drag & drop" operation.

Archive 3.0 stores and locates any type of file, including word processing documents, spreadsheets and graphics images. It also

to access the PC, unlock the keyboard and mouse, and access set-up information. A separate system administrator password can restrict access to configured settings, floppy drives, modems or printers.

HP also announced a new series of HP Vectra PC servers. The HP Vectra 486/33ST and the Intel 486 DX2-based HP Vectra 486/66ST servers come standard with Novell NetWare 3.11, an HP EtherTwist interface card and MS-DOS 5.0 operating system. The HP Vectra 486/33ST and 486/66ST use an integrated, single-board design. The security system for the new servers features a power-on password, network server mode to automatically restart the network after a power-down, floppy boot disable, floppy write disable and a push-button lock that blanks the screen and locks the mouse/keyboard while unattended.

Main memory in the servers can be expanded by up to 64 MB, and each model can handle up to six mass-storage devices with an internal capacity of 5 GB. There are also eight available full-sized EISA bus master slots.

The HP Vectra 486N PC series starts at \$1,149. The HP Vectra 486/33ST and 486/66ST servers start at \$3,779.

provides document location capabilities with Boolean wild card searches and an automatic keyword feature for popular Windows word processors. With Archive 3.0, you can access any object by clicking on the Archive icon and initiating a search based on the object's attributes and/or one of several other user-definable categories. Project contributors "archive" their work by dragging objects across the desktop to the Archive icon. When the object is dropped on its icon, Archive automatically logs onto the server, finds the appropriate work group project, and transfers the object's data file to the server.

Archive 3.0 is priced at \$700 per client (including server module).

Contact Johnson Computer Software Team Ltd., 3080 Yonge St., Ste. 5072, Toronto, Ontario M4N 3N1; (416) 487-3631.

Circle 394 on reader card

XView Toolkit 3.0 Ports Sun XView To HP 9000/700/800

UniPress Software announced Version 3.0 of the XView Toolkit for HP 9000 Series 700/800 workstations. With XView Toolkit, XView 3.0 applications can be moved from Sun workstations to the HP platforms by recompiling the application source code. New XView applications can be developed with the Toolkit's suite of object-oriented tools.

New features supported in the XView Toolkit Version 3.0 include drag-and-drop, multilanguage capabilities. The XView Toolkit is designed for those who want to use their XView applications on other platforms, and developers who want to port their XView applications to non-Sun environments. The object-oriented XView system enables the programmer to create and use function-rich objects such as windows, text and panels to construct applications.

The UniPress XView Toolkit Version 3.0 is \$2,495 for a single CPU development license.

Contact UniPress Software, 2025 Lincoln Hwy., Edison, NJ 08817; (908) 287-2100.

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In Focus Unveils Color LCD Projection Panel

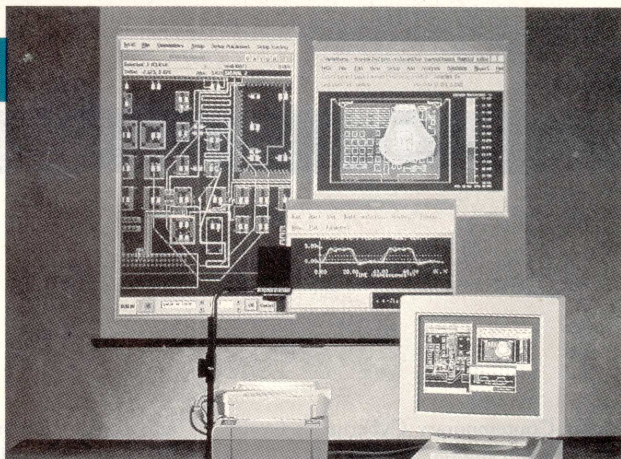
In Focus Systems announced the 7600WS LCD color projection panel for workstation platforms and applications.

The 7600WS combines portability with 1024 x 768 resolution and a 24,000-color palette. When placed on an overhead projector and connected with a single cable directly to the video port of workstations with resolution of up to 1152 x 900, the panel projects workstation software in full color onto a screen or wall. The 7600WS projection panel provides high resolution and full color capability, useful for computer-aided design (CAD) and 3-D modeling applications.

The 7600WS panel features built-in loop-through so you can see the image on the monitor and projection screen simultaneously. The 7600WS also offers on-screen set-up menus, push-button rear-projection mode and a remote control for image adjustments.

The 7600WS is compatible with most workstations, including HP Apollo, Sun Microsystems, IBM and DEC. The panel is also compatible with high-resolution displays

In Focus Systems' 7600WS LCD Color Projection Panel.



for Apple Macintosh computers as well as XGA, Super VGA and VGA personal computer graphics.

The 7600WS is priced at \$8,995.

Contact In Focus Systems Inc., 7770 SW Mohawk St., Tualatin, OR 97062; (503) 692-4968.

Circle 392 on reader card

Improved CDS/SecReview Has New Name And Functions

Chestnut Data Systems announced added features and a new name for CDS/SecReview. Now called CDS/Security, the

security software package for HP 3000 computers offers new access control features and a job submit utility.

CDS/Security release A.01 features improvements to the auditing functions. Now, the exception file list will contain fewer entries so the reader can focus on security related problems. Files with the exception "read access system wide" are now only presented in the new "File Supplement Report." Also, a new UDC report is included to aid in identifying UDCs that may affect security. CDS/Security provides existing Username/Session name password control,

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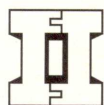
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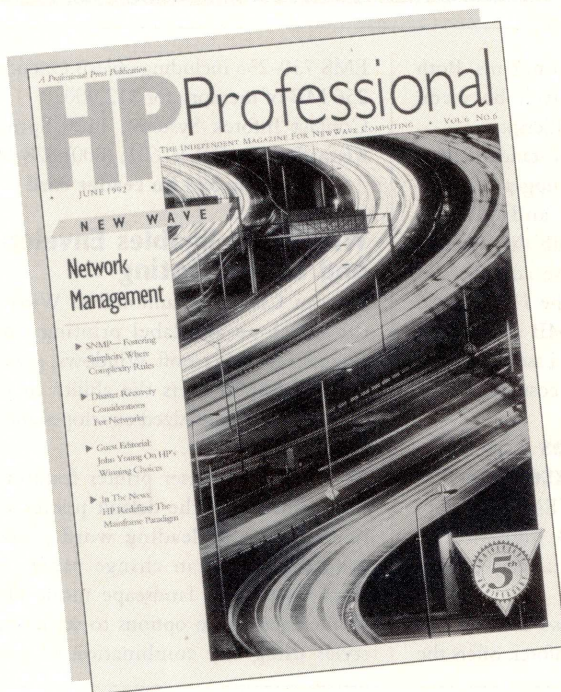
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dial-in port control, a job streaming utility and audit reporting capabilities.

All clients currently on maintenance for CDS/SecReview will receive the latest release of CDS/Security. Pricing for CDS/Security starts at \$1,050.

Contact Chestnut Data Systems, 6981 North Park Dr., Ste. 613, Pennsauken, NJ 08109; (609) 662-1611.

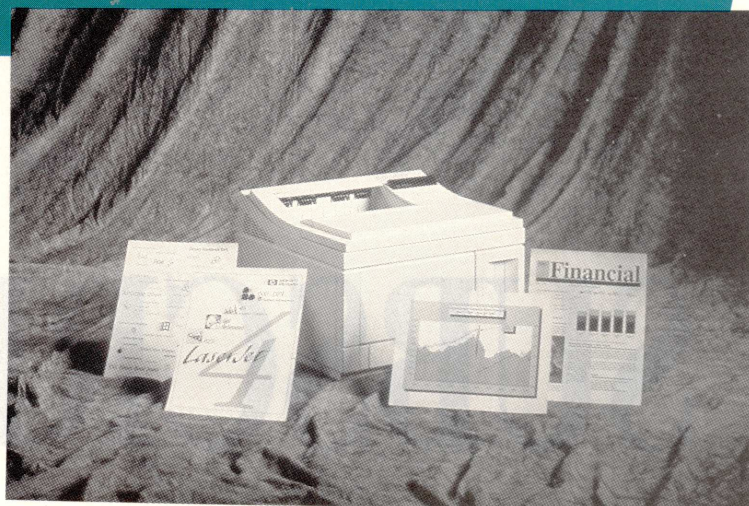
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HP Introduces 600-DPI LaserJet 4 And 4M Printers

HP announced the HP LaserJet 4 and 4M RISC-based, 600-dots-per-inch (dpi) laser printers for Intel-based PC, Macintosh and network computing systems.

The HP LaserJet 4 printer with enhanced HP PCL 5 printer language replaces the HP LaserJet III printer. The HP LaserJet 4M printer offers integrated Adobe PostScript Level 2 software, 6 MB of memory and automatic language and interface switching for use in Macintosh and mixed computing environments. The HP LaserJet 4 and 4M printers' true 600-dpi printing capability is enhanced by microfine toner and HP's Resolution Enhancement technology. The HP LaserJet 4M automatically switches between parallel, serial and LocalTalk so PCs and Macintoshes can be attached directly to the printer. The HP LaserJet 4 automatically switches between parallel, serial and optional HP JetDirect interfaces that support a variety of network operating systems. PostScript also is available to upgrade the HP LaserJet 4

**HP announces
600 dpi
LaserJet 4
and 4M
RISC-based
printers.**



printer for use in mixed environments. Both printers automatically switch between enhanced HP PCL 5 and PostScript.

The HP LaserJet 4 comes standard with 2 MB of memory and can be upgraded to 32 MB. Most 600-dpi text and graphic documents can be printed with the standard 2 MB memory because of the compression capabilities of HP PCL 5. The HP LaserJet 4M comes standard with 6 MB and can be upgraded to 22 MB. The HP LaserJet 4 costs \$2,199. The HP LaserJet 4M costs \$2,999.

EMS 730-256 Provides 256 MB Memory & Chassis Extender

Infotek Systems presents the EMS 730-256, consisting of four 64 MB high-profile memory modules and a custom chassis extender.

The chassis extender allows the HP 730 to accept memory modules. Infotek offers the

EMS 730-256 including chassis extender and 256 MB of memory for \$12,900.

Contact Infotek Systems, 1120 Spring St., Klamath Falls, OR 97601; (800) 828-0414.

Circle 393 on reader card

WinVeloze Enables Envelope And Label Printing

Duncan Clark Inc. announced WinVeloze, the envelope and label printing software program for Microsoft Windows, giving HP LaserJet printer users the ability to print a variety of different-sized envelopes and labels on any laser printer.

WinVeloze's laser printer features work independently of the default printer settings in Windows or leading word processing programs. You can change paper settings from portrait to landscape mode and use WinVeloze's style options to set up custom styles using any combination of printers,

Client/Server Front-Ends, for Your Host Applications.

Zebra Software's, **Frontender** for Windows allows you to quickly set up Windows front-ends for any or all of your host applications. **Frontender** provides the ability to set up permanent Hot-Links between your host's data and any other Windows application supporting the Paste-Link function; Thus creating a true 'distributed processing' environment. **Frontender** allows the designer to add entry

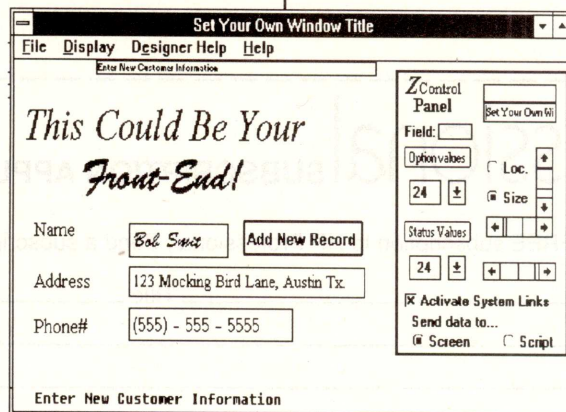
fields, text boxes (complete with scroll bars), drop-down lists, combo boxes and buttons; all completely configurable. **Frontender** also allows you to assign 'real' Windows context sensitive help for any or all screen fields.

Available for \$299.00

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printer bins, fonts and page orientations. WinVelo prints the U.S. Postal Service's POSTNET bar code. WinVelo can capture and paste information from any program using the Windows clipboard. It also reads and writes information from comma delimited, tab delimited and fixed-field text files, and WordPerfect 5.0 and 5.1 mail-merge files. Lotus 1-2-3, Excel, Quattro Pro and dBASE databases.

To run WinVelo, you need MS-DOS 3.0 or later, MS-Windows 3.0 or later and 1 MB of available hard disk space. WinVelo works with any HP LaserJet printer or compatible.

WinVelo retails for \$129.

Contact Duncan Clark Inc., 1401 Dove St., Ste. 560, Newport Beach, CA 92660; (714) 222-2833.

Circle 389 on reader card

4S Ships SuperNova 3.1 And SuperNova GUI Builder

Four Season Software announced the SuperNova GUI Builder, a graphical user interface builder for its recently upgraded

fourth generation application development tool, SuperNova 3.1.

The SuperNova GUI Builder is an add-on product to SuperNova and uses MS-Windows and Motif widgets in applications built with SuperNova. The SuperNova GUI Builder enables programmers to develop their SuperNova GUI applications within a Motif or MS-Windows graphical development environment. In addition, applications developed using the SuperNova GUI Builder can be transported to another environment.

Four Seasons also announced SuperNova 3.1, offering several enhancements. With SuperNova 3.1, the 4GL source code for the SuperNova development environment is provided, allowing developers to customize the look and feel of the SuperNova builder interface. In addition, an interface will be offered to the Unix Software Laboratories (USL) product, Tuxedo/T, providing online transaction processing capability. Also being added is an interface to HP ALLBASE.

Pricing for each product ranges from \$990 to \$108,000 and is based on the number of users and platforms.

Contact Four Seasons Software, 2025 Lincoln Hwy., Edison, NJ 08817; (908) 248-6667.

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Cognos Impromptu Supports Oracle RDBMS Via SQL*Net

Cognos announced Impromptu SQL query tool, supporting the Oracle RDBMS via SQL*Net on all platforms supported by Oracle.

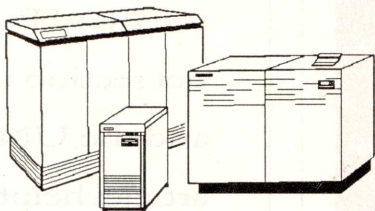
Impromptu enables you to perform complex queries of popular SQL databases without having to understand SQL, relational database structure or network navigation. Through the Microsoft Windows 3.x interface, you can perform queries such as sorting, grouping, calculating minimum, average and maximum values, totals, subtotals and averages using a mouse to point and click on menu items and icons in Impromptu's Query Bar. Impromptu takes care of network navigation and database access, enabling you to point and click on items of interest to automatically generate the SQL query syntax and send it to the host.

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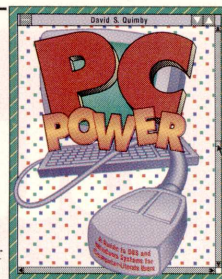
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results of database queries into PC tools with export options for Microsoft Excel, Lotus 1-2-3, Powerplay data files, text files and delimited ASCII. Impromptu supports Oracle via SQL*Net on all platforms supported by Oracle; as well as HP ALLBASE/SQL; Sybase SQL Server; Microsoft SQL Server; Borland InterBase and Digital Rdb.

Impromptu is priced at \$595. Contact Cognos, 67 S. Bedford St., Burlington, MA 01803; (617) 229-6600.

Circle 391 on reader card

Dataram Offers Memory For HP/Apollo 9000 Model 750

Dataram announced the DR9700/64 memory board-set, designed to increase the capacity of HP Apollo Series 9000 Model 750 workstations.

Consisting of two 32 MB memory boards, the DR9700/64 can be installed in any combination to increase memory capacity in Model 750 workstations all the way to the system maximum of 384 MB. Dataram also offers the DR9700/16, an earlier 16 MB version of the upgrade, and the DR9700D/32, a half-height 32 MB version, which are

both compatible with Model 720, 730 and 750 workstations.

The DR9700/64 is hardware and software compatible with the HP workstations. The board-set is priced at \$3,400.

Contact Dataram Corp., P.O. Box 7528, Princeton, NJ 08543; (609) 799-0071.

Circle 388 on reader card

Xpress 2.9 E-Mail Improves Screen Interface

Robelle Consulting presented a new version of Xpress, the electronic mail system that works on any HP 3000 hardware, and on all versions of MPE, including MPE XL.

Xpress 2.9 features several improvements. The new screen interface takes advantage of the features of your HP terminal or emulator. It clears the screen between tasks and writes a header line identifying the current basket and function. The function key labels are updated as their meanings change, according to the basket and function selected. Xpress is now capable of exchanging messages with MCI Mail. An Xpress user can send a message to any fax number or MCI user in the world.

Xpedit, the full-screen editor for Xpress

users, now allows you to send form messages, such as purchase orders or operations requests, or anything else that can be defined in a VPLUS forms file. You select a form from a menu of defined templates and fill in the blanks. You also can use VPLUS editing to provide default values and enforce required fields using HP's FormsSpec program.

Contact Robelle Consulting Ltd., Unit 201, 15399-102A Ave., Surrey, B.C. Canada V3R 7K1; (604) 582-1700.

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C/SPOT/RUN! Accelerates UNIX Software Development

PROCASE introduced C/Spot/Run!, a software development tool that lets C software programmers develop working code faster by combining in a single window key capabilities found in such UNIX development and analysis tools as Lint, Grep, Find and C Scope. C/Spot/Run! helps programmers spot errors, understand dependency relationships and evaluate code structure. C/Spot/Run! works with source code in any stage of the development cycle and can analyze code that does not

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successfully compile. C/Spot/Run! also eliminates the need to switch between multiple utilities that cannot share data and that have different interfaces and file boundary limitations.

C/Spot/Run! is priced at \$995 and supports HP Apollo 9000 Series 700 workstations and Sun SPARCstations. Contact PROCASE Corp., 3130 De La Cruz Blvd., Ste. 100, Santa Clara, CA 95054; (408) 727-0714.

Circle 376 on reader card

WRQ Hosts Conference On PPL For Windows

Walker, Richer & Quinn announced a hands-on client-server seminar on January 26-28, 1993, in Atlanta, Georgia. The PPL for Windows Developers Conference is for software developers interested in exploring the client-server model of computing as it relates to the HP 3000.

PPL (Process-to-Process Link) for Windows is WRQ's client-server enabling technology designed to give developers the ability to link host applications and data with Microsoft Windows 3.1 development tools

through Dynamic Link Libraries (DLLs).

The retail price of the PPL kit is \$3,995. Conference attendees can purchase the kit for \$2,500.

Contact Walker Richer & Quinn Inc., 2815 Eastlake Avenue East, Seattle, WA 98102; (206) 726-7226.

Circle 384 on reader card

Lakota Software Delivers Portable Shell Language

Software Maintenance and Development Systems (SMDS) introduced Lakota, a portable shell language and embedded kernel from Software Maintenance and Development Systems.

Lakota allows developers to connect existing modules, utilities, command interfaces and other legacy software so that they operate as a single, unified program. Lakota code is portable across operating systems and supports modern programming concepts such as named procedures, scoped data, inheritance and block structured code. It is suitable for use as a programming, scripting or command language interface.

Lakota is available as a portable shell

language alone (Lakota/IS) and as a portable shell language with an embedded kernel (Lakota/IL). On HP-UX, Sun Solaris, DEC Ultrix and IBM RS/6000 AIX platforms.

Pricing for the shell is \$99 per user in volume. Rights to internal use of the embedded kernel are \$3,000.

Contact Software Maintenance and Development Systems Inc., P.O. Box 555, Concord, MA 01742; (508) 369-7398.

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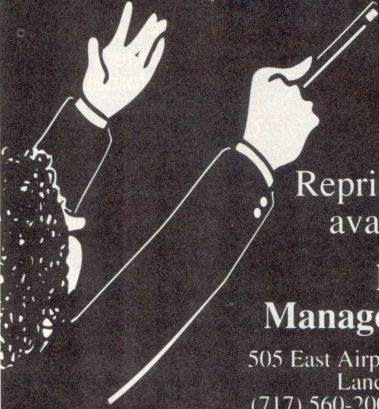
Emphasys Presents Cross/36 HP 9000/800 RPG Migration

Emphasys Software has ported its Cross/36 RPG migration software program to the HP 9000/800 series workstation.

The certification was conducted with the help of HP's General Systems Division's Competitor Replacement Program that supplied the HP 9000/800 machine Emphasys used to complete the certification. Emphasys used its IBM 5363 computer to create and test the port.

The Cross/36 product line consists of an RPG II development system, an RPG III development system for System/36 appli-

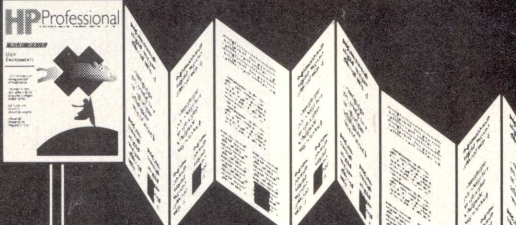
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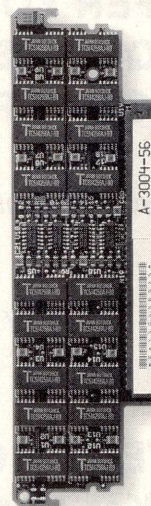
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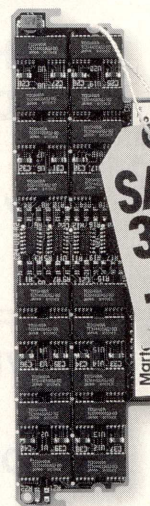
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cations written in ASNA's RPG III, runtime versions for both development systems, and a data conversion utility for converting data either from or to System/36 format.

Contact Emphasys Software, 9855 W. 78th St., Ste. 240, Eden Prairie, MN 55344; (612) 941-9337.

Circle 382 on reader card

NSL Unveils Version 2.0 Of XFacemaker & WidgetLibrary

Non Standard Logics (NSL) introduced Version 2.0 of XFaceMaker (XFM), the X/Motif applications interface system.

XFM's new WidgetMaker feature allows designers to build customized, personalized widgets that can be used with Motif, Open Look and other toolkits. Using XFM's templates, widgets can be assembled into objects with assigned behavior, inheritance and open-ended reusability. Other new features of XFM include ability to edit menus through a dialog box, print the interface and widget tree in PostScript, program in FACE, a C-like scripting language, declare and define functions, provide default values for

application functions, move widgets within the interface hierarchy, and change the class of a widget on the fly.

XFaceMaker 2.0 requires a minimum of 8 MB of CPU RAM, X11R4, and Motif Version 1.1. It is available on most UNIX platforms, including HP, Sun, DEC and IBM. Single user price of XFaceMaker 2.0 is \$4,995.

Contact Non Standard Logics, 99 Bedford St., Boston, MA 02111; (617) 482-6393.

Circle 381 on reader card

PerfectMail Features The Global Connection

MiniSoft announced The Global Connection gateway link for the PerfectMail electronic mail system.

The Global Connection is a software bridge that links PerfectMail users to the world via MCI Mail or AT&T/Easylink public networks. With The Global Connection, messages or files created in PerfectMail can be sent to any recognized public carrier address, creating a transparent interface for sending and receiving FAX,

Telex, E-mail, courier, postal mail and X.400 messages. PerfectMail users can send messages to users on Internet, CompuServe, Bitnet, Profs, ALL-IN-1, and HPDesk.

Built in support for MHS (Message Handling Service) allows the PerfectMail user to seamlessly exchange mail with popular LAN-based electronic mail packages, including cc:Mail, WordPerfect Office and Da Vinci. PerfectMail Plus combines the standard PerfectMail electronic mail system with The Global Connection. Versions are available for HP 3000, HP 9000 and LANs. Contact MiniSoft Inc., 13617 SR 9, Snohomish, WA 98290; (800) 682-0200.

Circle 380 on reader card

IEM Releases QIC Drives For HP 9000/800 Users

IEM announced the IEM Model 4250S, the sequential access Quarter-Inch Cartridge (QIC) tape drive for HP 9000 Series 800 computers.

IEM's model 4250S allows users of HP 9000 Series 800 systems to transfer data to and from Apollo, Sun, DEC, IBM and other

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CIRCLE 129 ON READER CARD

platforms under UNIX. The model 4250S uses the QIC-525 format, and can store up to 525 MB on a DC 6525-type cartridge. The 4250S has read and write compatibility with QIC-120, QIC-150, QIC-320 and QIC-525 formats. It also has read-only compatibility with the QIC-24 format.

When a previously written tape cartridge is inserted, the drives automatically detect and use the format on the cartridge. The user specifies which format will be used when writing to a tape.

Contact IEM Inc., P.O. Box 1889, Fort Collins, CO 80522; (303) 221-3005.

Circle 375 on reader card

Marconi Offers Requirements Traceability & Management

Marconi Systems Technology announced RTM (Requirements Traceability & Management), a new CASE software tool designed to ensure that developed systems meet all user expectations or requirements.

RTM enables you to manage the thous-

ands of objects generated by a project by recording the interrelationships, ensuring that users remain informed and in control throughout the project lifecycle. RTM relates each development activity to the original requirements. When a requirement, piece of code, or any project item has to be changed, RTM's impact analysis can show the effect of that change on every aspect of the project. At the end of a project, project managers can then show that each requirement has been met and tested. RTM provides direct interfaces to industry standard CASE and reporting tools for analysis and design, configuration management and desktop publishing.

RTM is available on HP 9000/700, Sun SPARC and DEC VAX/VMS systems. RTM is priced at \$20,000.

Contact Marconi Systems Technology, 4115 Pleasant Valley Rd., Ste. 100, Chantilly, VA 22021; (703) 648-1551.

Circle 374 on reader card

French Workstation Distributor Delivers Scope/X Data Acquisition Tool

Altis Informatique, one of HP's three value-added workstation distributors in France, introduced Scope/X, a software package for HP workstations that provides for the acquisition, visualization and real-time storage of test measurement data.

Scope/X collects, visualizes and stores in real time, analog data from the HP 3852 test measurement system. It will support VXI test measurement systems, with the release of version 2.0 in January, explains Pierre Lemarchand, Altis co-founder and executive. Using the software's transfer tool, all or part of the data can then be exported to analysis software packages such as Metrica, from U.K.-based manufacturer Leading Technology. (In the U.S., Leading Technology Inc. is based in Burlington MA. Its product originally called Tekbase, was renamed Metrica to avoid confusion with another product with the same name.)

Scope/X runs on HP 9000 Series 300 or 400 workstations running HP-UX. Support for the Series 700 will be available in January under Version 2.0 according to Lemarchand. The software is based on a variety of de-facto industry standards including UNIX, Motif and C++, Altis says.

According to Lemarchand, the rate at which that the system acquires test measurement samples is restrained only by the test measurement system and the speed of the hardware platform. Scope/X itself is capable of rates as high as 100,000 measures per second, he says. The software also allows users to define groups of sampled channels at various frequencies.

Scope/X offers several real-time visualization modes, including oscilloscope and alpha-numeric displays. Because visualization is independent of data acquisition, it can be suspended and restarted as the user needs.

Lemarchand says Altis hopes to market Scope/X globally and that the company will be recruiting a distributor — particularly for the U.S. market. Distributor candidates would ideally be companies specializing in HP systems, particularly test and measurement, which have a national distribution capability, he says.

According to Lemarchand, Scope/X is the result of a year-long development effort and an investment of about 1 million French francs (approximately \$200,000). —Marsha Johnston, International Editor

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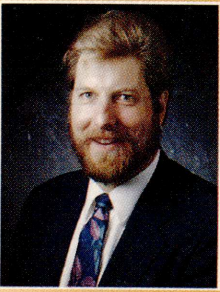
- **“Are You Ready For RAID?”** — Ed Pavlinik, HP's Disk Array Product Manager, explains that prospective users must weigh RAID's reliability and high-availability benefits against its performance limitations.
- **“HP-UX And Multivendor Network Backup”** — Paula Jacobs examines backup and archiving options for HP-UX users in heterogeneous UNIX environments.
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**Gordon
McLachlan**

If I Ran The LAN

Editor's Note: This month Gordon McLachlan gives us chapter and verse on the difficulties of managing corporate LANs. Our apologies to the late Dr. Seuss.

My name is McHooter, and I had a plan,
To buy some cheap clones and a peer-to-peer LAN.
We'd share all the printers and make files fly
All over the place, with the LAN I would buy!

But the Tech Weenies said, "Where's your plan for this LAN?
You can't get a network without a *real* plan!
What *you* call a plan is a Beancounter's dream;
For a LAN plan you need a crack technical team!"

What plan could I need for my peer-to-peer LAN?
It's small and it's cheap, so we don't need a plan!
We'll plug in computers and hook up some wire.
All we'd get from a plan are costs that are higher!

Boondoggle — he is the Tech Weenie King,
Said, "It's clear as can be that you don't know a thing!
When I looked at your plan it was easy to see:
You didn't dot all the 'I's, and cross all the 'T's!"

"But my plan is so easy," said I with chagrin.
"There's no need to put any more of your garbage in.
It's simple, it's clean, and it's cheap and it's small,
And it's cost justified for just this much, and that's all!"

Boondoggle said, "No! We must go by the book!
And we'll make sure you do it, by hook or by crook!
If you want to get funding and network support,
You'll do what we say, or your plan will abort!"

"But I am McHooter! I'm running this show!
And I'll show you all just how far I can go!
All I need is some hardware, some software and cable
And I'll stack it all up on this old beat-up table!"

"Things change," said Boondoggle, a smile on his face.
"And you don't understand. You're no technical ace.
There's more to this LAN than McHooter's computers!
There's TCP/IP and E-mail and routers!"

"There's Network File System and UNIX and DOS.
There's error detection for stuff that gets lost.

We know all these things, and you're stuck in a loop,
If you want our approval, you'll jump through our hoop."

"McHooter, old man," said the Tech Weenie King,
"Our servers are UNIX on big Token Rings.
To talk to the mainframes we need to buy gateways
And routers with paths that go two, four, or eight ways!"

"The problem," said I, "is the standards you've set.
They'll stop me from getting what I want to get!
If I buy what you want, then I'll run out of money,
And I'll have to get more, and that just isn't funny."

Said Boondoggle dryly, "We just make the rules up.
It's *your* job to ante the corporate jewels up!
If you can't afford it, you ought to make plans,
To lay off some people to buy your big LAN!"

I could see I'd get nowhere with this Tech Weenie dandy,
I had to go upstairs — up to El Queso Grande.
If anyone here could still get me my LAN,
The CEO, yes, he was clearly the man.

El Queso knows nothing of PCs and LANs,
But money will make him stand up on one hand.
To waste it is sinful and I'd make him think
That the Tech Weenie's schemes would result in red ink!

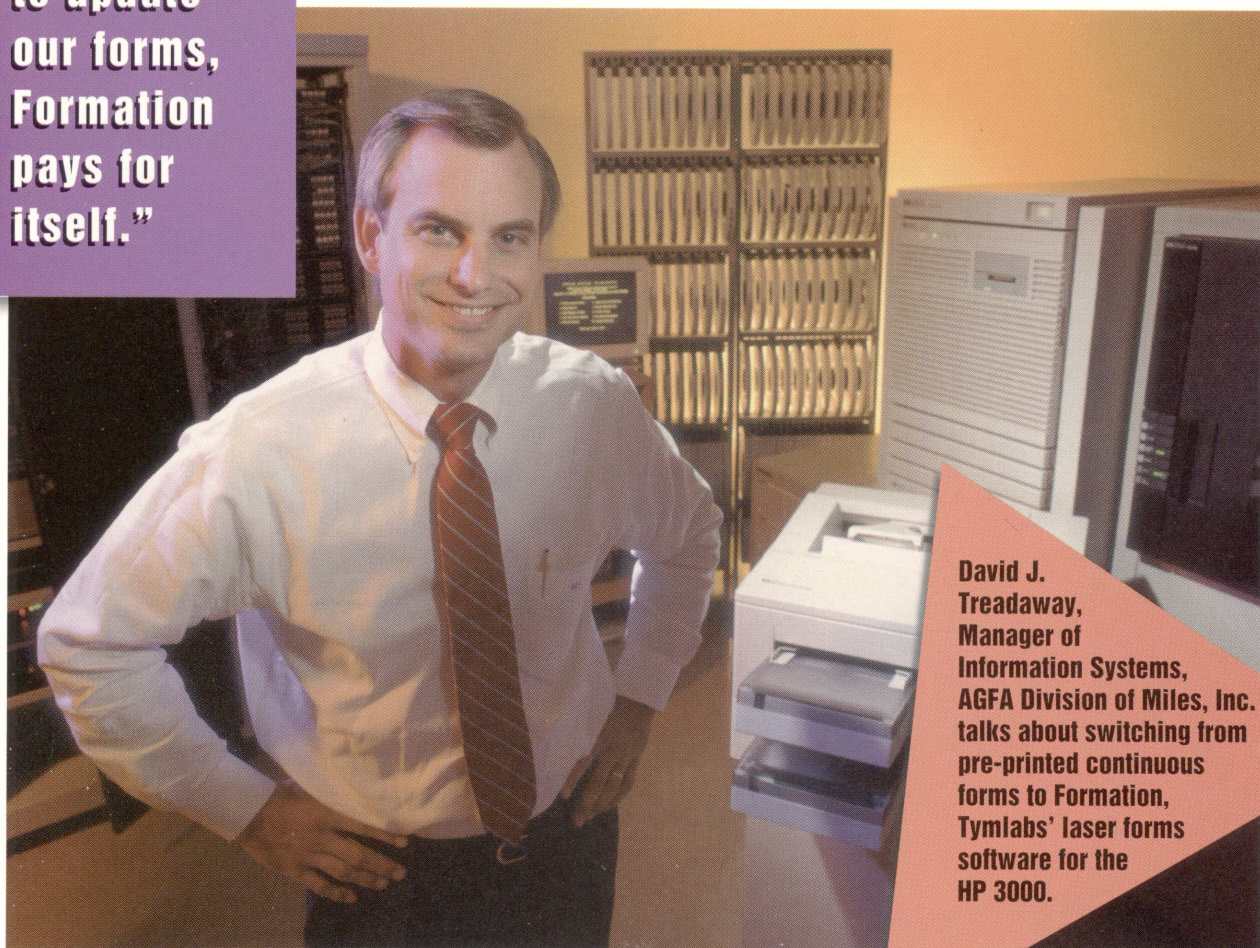
So I said to El Queso, "A peer-to-peer LAN
Will get me as much as the Tech Weenies can,
With their TCP/IP and E-mail and gateways,
And routers with paths that go two, four or eight ways!"

"McHooter, am I, and if I ran this show,
I'd tell those Tech Weenies just where they could go.
If the Beancounter King ruled the Tech Weenies, too,
I'd change all their rules and make Boondoggle stew."

"That's a splendid idea that you've had there, McHooter.
I'll give you control of the Weenie computers.
Mr. McHooter, you now run the show!
And the weenies report to the new CFO!"

So we bought all those clones and some peer-to-peer LANs
And we muddle along — do the best that we can.
But it's costing us more of the company jewels
Than we thought that it should. So, we need some new rules!

**"Every time
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to update
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itself."**



**David J. Treadaway,
Manager of
Information Systems,
AGFA Division of Miles, Inc.
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Tymlabs' laser forms
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